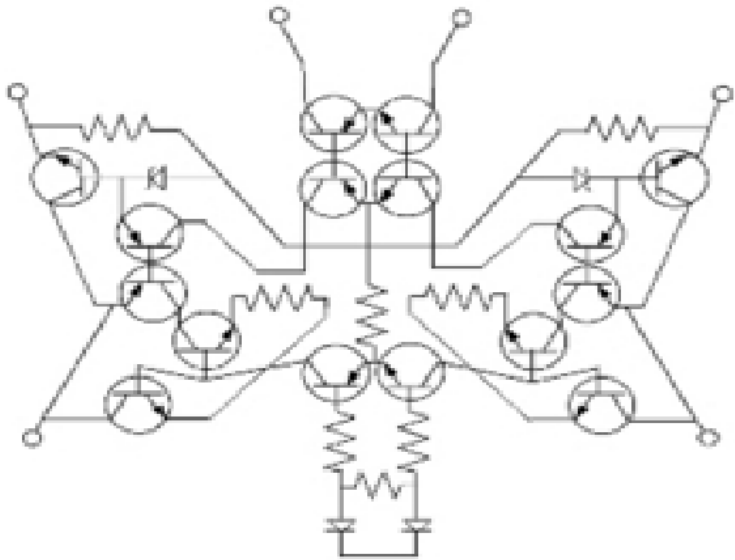
The Metamorphosis of Prime Intellect

A Novel



by Roger Williams

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Annotation

In a time not far from our own, Lawrence sets out simply to build an artifical intelligence that can pass as human, and finds himself instead with one that can pass as a god. Taking the Three Laws of Robotics literally, Prime Intellect makes every human immortal and provides instantly for every stated human desire. Caroline finds no meaning in this life of purposeless ease, and forgets her emptiness only in moments of violent and profane exhibitionism. At turns shocking and humorous, Prime Intellect looks unflinchingly at extremes of human behavior that might emerge when all limits are removed.

An international Internet phenomenon, Prime Intellect has been downloaded more than 10,000 times since its free release in January 2003. It has been read and discussed in Australia, Canada, Denmark, Germany, Japan, Mexico, the Netherlands, Slovenia, South Africa, and other countries.

- Roger Williams
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  - * Chapter One: Caroline At Play
  - * Chapter Two: Lawrence Builds a Computer
  - * Chapter Three: Caroline and Anne-Marie
  - * Chapter Four: After the Night of Miracles
  - * Chapter Five: Caroline Approaches
  - * Chapter Six: After the Change
  - * Chapter Seven: Caroline and Lawrence
  - * Chapter Eight: After the Fall

Roger Williams
The Metamorphosis of Prime Intellect

In the best possible future, there will be
no war, no famine, no crime,
no sickness, no oppression,
no fear, no limits, no shame…
…and nothing to do.

This online novel contains strong language and extreme depictions of acts of sex and violence. Readers who are sensitive to such things should exercise discretion.

* Chapter One: Caroline At Play

Her name was Caroline Frances Hubert, and she had three claims to fame.

In the first place she was the thirty-seventh oldest living human being. Caroline herself was unimpressed by this fact. To her way of thinking it was the result of an accident, nothing more. In any case she had been the thirty-seventh oldest human being for a long, long time, and it got to seem more of a bore than an accomplishment after a while.

In the second place she had once been infected with rabies. Caroline was rather proud of this distinction, though it had also been a long time ago. There was a certain class of people who were quite impressed with Caroline's bout with rabies, not so much because she survived it but because she *hadn't*. It had taken Prime Intellect fifty-six hours to realize it couldn't repair the damage to her nervous system, to backtrack, and to put her together again like Humpty Dumpty. For fifty-six hours, she had not existed. She had been dead. And she was the only one of the trillions of souls in Cyberspace who had ever been dead, even for a little while.

In the third place, and most important to Caroline because it represented a real accomplishment rather than an accident or a one-shot stab of cleverness, she was undisputed Queen of the Death Jockeys. She would always be the thirty-seventh oldest person, and after her rabies experiment Prime Intellect had shut the door on further explorations of that nature. But the Death Jockeys constantly rated and ranked themselves by inventiveness and daring and many other factors. It was an ongoing competition, and if Caroline didn't keep working at it she'd be lost in an always-growing crowd of contenders. Caroline wouldn't admit that her high ranking was important to her, but it was all she had and she threw herself at it with an energy that was fierce and sometimes startling.

As she woke up, a window opened up in front of her, a perfect square of light, razor-edged and opaque. One cold message floated within it:

*** You have four challengers.**

She could have had any surroundings she wanted, even a whole planet of her own design. A waste of time, she felt. Her personal space was minimal. In fact, it was the *bare* minimum, a floor and a gravity field. There was no visual distinction between the floor and the sky or ceiling or whatever you chose to call it. Everything was exactly the same shade of soft white. When she wanted to relax she turned off the gravity and floated in free-fall. When she wanted to sleep, she turned

off the light. If she wanted anything else, she called for it and then got rid of it when she was finished.

"Gravity. Keyboard," she demanded. She felt gradually increasing pressure under her feet as a console blinked into existence. Caroline was as conservative as her years — six hundred and ninety of them — might suggest, a collector of useless skills and worthless experiences. Typing was one of the useless skills she prized most highly, and her fingers flew rapidly as she discussed the day's business with the Supreme Being:

> **List the records of the challengers.**

*** #1. 87 recorded, 4 exhibition, rating 7**

*** #2. 3 recorded, no rating**

*** #3. 116 recorded, 103 exhibition, rating 9**

*** #4. 40 recorded, rating 6**

Caroline scowled. None of them even pre-Change — Prime Intellect would have noted it if they were. Babes hoping to get lucky and impress her. The third one was interesting, though; he must have done something noteworthy to garner a 9 rating in so many exhibitions.

> **How old is #3?**

*** 22 years**

Caroline blinked. It was hard for her to understand the souls who continued to feel a need, even after hundreds of years, to be fruitful and multiply. Actually encountering someone so young made her feel a little creepy. Calculating backward, she wondered what manner of psychotic would have bothered to have a child after 568 years of Cyberlife.

> **Background?**

*** Timothy Carroll was born to orthodox Catholic parents who live with like-minded people in a communally designed Earthlike world. He signed for independence at age 14 and has spent most of his time Death Jockeying since. He is considered very imaginative and takes an artistic approach. Thirty-seven of his exhibitions have been in the Authentic class.**

> **But he's also into Cybershit.**

*** He is young and experimental. He may outgrow this interest in Death sports when he has exhausted his rebellious streak.**

> **You're a computer. How the fuck would you know?**

Prime Intellect didn't reply; it had learned that the best response to her jabs was to ignore them. It had long ago given up trying to reform her. She knew it did not like Death Jockeys one little bit, if a computer could even be said to «like» or «dislike» anything. And in Caroline's case the feeling was certainly mutual.

In her fantasies, she dreamed of having the power to give it a case of heartburn so big its gears would stop turning.

Most people did not share Caroline's distaste for the Omniscient One. A great many worshipped it, despite its apparent embarrassment over the fact. But why not? It could and would do damn near anything you asked, as long as it didn't affect anyone else. And even that was open to negotiation with the other people you might want to involve. There were no noticeable limits to its power and it never asked why. Caroline knew a whole crowd of people who preferred for Prime Intellect to manifest itself in the form of an attractive member of the opposite sex. Prime Intellect was nothing less than the perfect God, made incarnate by the power of technology. Caroline couldn't see how fucking God was less perverted than being death-obsessed, but hey, there it was.

Caroline hadn't been all that impressed with God even in the days before Lawrence had brought it forth in his own image. She preferred to keep it in its place. It was just a computer. If you didn't keep that thought *firmly* in your mind it was too easy to start thinking of it as human, and that was the first step toward forgetting. Caroline didn't want to forget. And she didn't need to fuck Prime Intellect to get her jollies anyway. She could get her jollies from actual people. She only communicated with it at all when she had to, through the screen, keyboard, and a few curt spoken and subvocal commands.

> Set it up with #3. Tell the others to come back when they've got some more experience.

*** You have an invitation from Fred, and Raven's party is in 18 hours. Priorities?**

> Let's deal with the challenger first.

Instantly, her surroundings changed.

She was standing in the middle of a circle of people in an open meadow. Earthlike. With fourteen trillion people running around Cyberspace, you'd think a few of them would come up with something more imaginative than carbon copies of the Earth. *Poor quality* carbon copies at that, natch. There was a big hole in the ground, perhaps ten feet wide, at her feet.

A tall, youthfully handsome man stood across it from her, impeccably dressed and groomed. This was a bad sign, because appearances were cheap in Cyberspace. All it took was a word, and you could be young or old or thin or have different hair. You could change sex or race or even make yourself into an animal. Nobody was impressed by appearances any more. Nobody, at least, except for those of her generation who remembered what it was to be insecure, and the very young who hadn't figured out the score yet.

Caroline let her own body age naturally; when she reached her

apparent late thirties, she had it restored to about age sixteen. This wasn't vanity; she couldn't maintain her athletic lifestyle if she allowed herself to get too old. She had been through the cycle dozens of times. Most people simply had themselves frozen at an age they found comfortable and left it at that, but Caroline preferred the occasional dramatic intervention. The first time she had regressed she hadn't been asked, and doing it this way helped remind her of that violation.

At the moment Caroline looked to be in her mid to late twenties. Her athletic build was the result of real exercise, her skills the result of real practice. She asked Prime Intellect for very little, and resented having to ask for that.

Caroline was naked. She had not worn clothes since the Change except for an occasional costume in a Death fantasy. She wore no makeup, and her long hair was an unkempt tangle. What was the point? A word to Prime Intellect could provide anything, fix anything, but none of those things it provided or fixed would be uniquely *hers*.

Which didn't mean Caroline refused to decorate her body at all. It just meant that she decorated it in signature style, without help from Prime Intellect.

"Welcome," he said. "I am Timothy. You are Caroline Hubert?"

"The one and only."

"An honor, then. And it is an honor for me to challenge you to accept Authentic Death."

"Proceed," Caroline mumbled.

Caroline looked around at the audience, and noticed that they were *all* wearing clothes. Worse, they were all wearing the same kind of clothes, casual dress that would not have been out of place in a Western city just before the Change. That was an even stronger sign she was in amateur territory. Caroline's aesceticism may have been extreme, but she was hardly alone in her belief that clothing was pointless for immortals. Any random grouping of people would normally include some pretty wide variations in fashion. Especially at Death exhibitions, which tended to attract loons and deviants like herself.

She felt an instant dislike for this kid. True, she felt an instant dislike for nearly anybody who participated in the sham that passed for reality in Cyberspace, but in Timothy's case the feeling was stronger than usual. This hate welled up within her unbidden like those other mysterious and powerful feelings, love and masochism and sexual attraction. He had a kind of natural charisma, and she could feel the small crowd orbiting around him. Females outnumbered the males by more than two to one. He probably had them all convinced he was a fucking genius, as if genius was a rare commodity in

Cyberspace or as if it had anything to do.

They were anxious, though. Anxious in the presence of the great lady, anxious to see how their little tin genius would fare. They were unnerved by her nakedness, by her proud and alert stance, by her forthrightness and lack of self-consciousness. They sensed that their clothing could not protect them from her scorn, nor would her nakedness make her vulnerable to theirs.

Most of all, though, they were unnerved by the fact that she wasn't *quite* naked.

Caroline's body was covered with brightly colored pictures, pictures that had obviously been there a long time. Pictures that didn't come off. The pictures were even worse than simple nakedness, because they drew the eye to the very parts of Caroline's body that would normally be covered and private. Timothy coughed and posed the question that was obviously on all of their minds: "Your body decorations are fascinating. Are they Authentic?"

"Tattoos."

"I understand the process is painful."

She flexed her arm, regarding the fat python coiled around it. Painful? *Especially* the way she got them, it was painful. She was covered in serpents, and with one exception every design had been drawn with an obsidian knife blade and colored by rubbing natural pigments into the cuts. They covered eighty percent of her body. Even her face was framed by a pair of green mambas. Snakes slithered up and down her torso, coiled about her limbs, investigated her orifices.

The one exception was a tiny black design on her left shin; that one wasn't a snake and it wasn't a tattoo. It was the letter «F» and it was the signature of her tattoo artist. It had been applied with a branding iron. The memories made her smile; new tattoos were the only good thing about her periodic age regressions.

"It doesn't kill you," she finally said.

Nervous laughter.

"All you have to do is jump in," Timothy suggested. "After making the Contract, of course."

"It's a designed experience, is that it?"

"Yes."

"How long you spent designing it?"

"Two years. I've gone through twenty-three times myself."

Caroline nodded, sighed, and said: "Prime Intellect, standard Death Contract for…is twelve hours enough?"

"It should be," Timothy said.

"Standard Contract for twelve hours." She felt the warning buzz that meant it had heard; then disconnect. The always-present listening ear, or microphone, was gone. It would obey her last command

perfectly — until it was countermanded by Timothy, whose universe it was, or by her own impending demise, which would kick in the First Law. Or until twelve hours had passed, in the unlikely event she survived that long.

No matter what happened, she would have no trouble making Raven's party.

She jumped.

She fell about ten meters and landed on her feet, breaking her left leg below the knee. That was no big deal; had she landed on one of the spikes which dotted the bottom of the hole, she'd already be impaled. She wondered what would happen next if she had; impaling is cute but it hardly qualifies as a grade-nine experience.

It was dark. Very Freudian; she should have expected that from a Catholic kid, no matter how rebellious he thought he was. They'd be watching her with enhanced senses, though. Timothy wasn't the sort to extend Authenticity to the observation process.

Well, it was his universe.

She was at one end of a tunnel. It was dolled up to look like a natural cave, but Caroline knew right away that there was nothing natural about it. Real caves do not grow in nice neat lines. They twist. They tend to follow the soft rocks, which occur in sheets and often aren't level. The hole she had fallen through should have been a sinkhole; she should be surrounded by fallen rocks and debris. But it was as straight and solid as an elevator shaft.

This space had *none* of the defining qualities of a natural cave. It was just a rough tunnel, carved by Timothy's imagination. He had thought to hang stalactites from the tunnel ceiling, even though there were no other cave formations to suggest how they were formed, and no matching stalagmites projecting from the flat, dry floor.

She began crawling down the tunnel, and the first stalactite fell inches from her side. It shattered; it was not stone but some glasslike material that revealed thousands of razor-sharp edges. Another fell some distance away. Great, she thought idly. She crawled on, collecting hundreds of small cuts from the shards. Then one fell on her left hand directly, skewering it. Caroline gasped, but she didn't scream. She just broke it off and kept going.

She wondered if he was aiming them, or if the fall was random. It didn't really matter; the idea wasn't to survive, after all.

She reached the end of the tunnel, and found herself in a small chamber. Another tunnel veered off to the right at a sharp angle. How imaginative. A glowing ball hung by a thread from the ceiling. She raised her hand toward the light and watched in astonishment as her fingers sheared off in a perfect line.

"Whafuck?" she said aloud. She moved her hand again, and sliced

off more flesh. An invisible cutting surface was stretched across the room. The pain was beginning to get interesting, but not interesting enough to counteract her growing sense of boredom. Blood was jetting from the stumps of her fingers. Summoning her strength, she aimed carefully and sat up, deliberately decapitating herself.

She was conscious of her own head falling, striking the floor as her body twitched above, and then Prime Intellect intervened.

"Why the hell did you do that?" Timothy demanded from across the entry pit. She had snapped back whole, as if she had never jumped. She could still feel a little pain where her leg had broken, just a fading echo. Fading fast.

"If you had designed it right, I wouldn't have been *able* to do that. What the hell was that cutter supposed to be, anyway?"

"That was diamond monofilament. Part of the booby trap you were *supposed* to get past, minus a few more dents. If you…"

"You call that *Authentic?*"

"It's physically possible…"

"No it's *not*. This is science-fiction shit. What were those stalactites made of? I can tell you it wasn't calcium carbonate. Look, you want to compete in Pain, or Adventure, or Imagination, go right ahead. But Authentic is for things that could really have happened in the pre-Change world."

"I don't think you understand…"

"I don't think *you* understand, sonny. Did you bother to ask Prime Intellect about me?"

"You're pre-Change and you're the best. That's what counts."

"Not just pre-Change. I was a hundred and six years old. *Before* the Change. I was in a nursing home with bedsores the size of baseballs and six different kinds of cancer eating me away. And my nurse was stealing my pain medication to trade for cocaine, so I got to experience every delightful moment in full three-D. This went on for *years*. And I didn't know Prime Intellect was gonna pop me back into this nice healthy body when it was all over. It was just the inky unknown and the pain. That's what death is. *That's* what counts."

"I was just trying to reach an artistic balance," he pouted. "I didn't realize you'd be so picky about the technical details."

"*Artistic?* What fucking *bullshit!* You think I've never been chopped into little bitty bits before? You just don't have time to appreciate *art* in a situation like that. Not if you have any human feelings at all."

"Why not? It's just a game."

"That is exactly the problem." She signalled Prime Intellect, and the meadow disappeared.

"You really put him in his place."

The words came from a shambling monster, a skeleton with loose

folds of rotting flesh draped across its bones. Although its muscles couldn't possibly work, it moved, pointing a bony finger at her. The jaw moved as it talked, and sound came out even though the larynx and lungs had long rotted away. Its voice was strong and powerful. Surprisingly bright and alert eyes bobbed in the eye sockets.

"You're starting to stink, Fred."

"I know. I think it adds an extra dimension to the experience. You wouldn't *believe* how many types of bacteria are involved in the decay process."

Fred was on his seventh body as a zombie; when all the scraps of flesh rotted away and he was reduced to a living skeleton, he'd have it fleshed out again and start the process over. He had directed Prime Intellect to change the rules slightly in his personal space; death was still impossible, but healing occurred only in the authentic circumstances at the authentic rate. When healing was impossible, as it was after each time Fred cut his wrists to extinguish the life of his new body, consciousness and feeling would go on. Even for a rotting corpse.

It had started out as nothing more than a little joke on Caroline's periodic un-aging ritual, but Fred had found that it was *fun* to be a zombie.

His personal home was decorated in a matching Halloween motif; he had a huge haunted house with rotting floorboards and real ghosts. Large spiders spun intricate webs in the corners. Monsters prowled outside in the graveyard.

"That punk needed his bubble popped. He should spend some time as a zombie. Might teach him something."

"He never will. Too vain."

"Never is a long time," he reminded her.

There was a dramatic ding, followed several seconds later by a long, sonorous dong. A kid's voice: "Trick or treat!"

"Care to get the door, darling?" Fred asked graciously.

Caroline laughed and got up. Fred faded away. She knew the «kid» would be nearly as old as herself. Prime Intellect would never allow a real child anywhere near Fred. But Caroline wasn't the only one to appreciate his twisted and darkly humorous fantasies.

She opened the door and juvenile eyes opened wide in startled amazement. "Lady, you're naked!" the brat said. He looked about twelve, and was a surprisingly good actor. It was easy to believe his dumbfounded gape was the reaction of a pubescent boy who had never seen a naked woman before.

"No I'm not," Caroline said sweetly. I have my beautiful tattoos."

"I…I…"

"You want a treat?" Caroline asked teasingly, cupping her breasts

and offering them to him. Her left nipple was already being tasted by a tattooed snake, whose body was coiled around her right breast, framing it invitingly.

"My…my mama said…"

"Or you want the *trick*?" Fred floated down from the roof and wrapped one rotting hand around the kid's head, forcing him forward, mashing his face against her bosom. "Take a *close* look," he said. "Take your *last* look."

The kid began screeching quite realistically, then Fred dragged him inside and started taking him apart. He should have gone into shock after Fred ripped off his right arm, but that little physiological mechanism also didn't work in Fred's home. Fred took a couple of experimental bites, then tossed the arm aside.

"Stringy," Fred said. "Let's try a drumstick."

The screams reached ear-piercing levels as Fred ripped off the left leg. There was blood everywhere, but Fred was working fast and the kid wouldn't have time to bleed to death.

"Want a bite?" he asked Caroline.

"Thanks, I already ate," Caroline said politely.

Fred the Zombie ripped the boy's belly open and rooted in his intestines, then gutted him. Finally he administered what should have been the coup de grace by ripping the kid's head off.

Fred held it up by the hair and pressed the face against Caroline's breasts. "One last kiss," he directed. The eyes were still tracking, and the mouth trying to scream. Then it kissed her left nipple, touching its blue tongue to the forked tongue of the tattoo-snake as Fred had directed it to.

"Bye now," he said to the head, and he dropped it and smashed it underfoot.

"Do these guys really get off on this?" Caroline asked.

"This question coming from a woman who infected herself with *rabies*, no less." The body, including the spreading stain of blood and gore, disappeared. "Nearly all of them are pre-Change. You saw an example of a *modern* sex pervert just before your arrival here."

"Ugh. Give me Charlie Manson. Someone with class."

"At your service."

Debate had raged just after the Change over people like Fred, the serial killers and pedophiles and rapists that were running around when things got made over. There was a huge demand for them to be eliminated, or punished. Prime Intellect had stood its ground, saying that it was no longer possible for them to hurt anyone and there wasn't any point. This had made it seem terribly moral, although Caroline thought the real reason Prime Intellect reacted that way was that Lawrence had fucked up its programming. But it had been a little

late to do anything about that.

"You didn't pop over to check out the guilt-ridden pedophiles," Fred said. "You want to play?"

She shrugged. "Beats farting around with Timothy." She steeled herself. "Standard Contract until the party," she then said to the thin air. There was no need to tell Prime Intellect what kind of Contract she meant. She played with Fred often enough that it knew exactly what she wanted. She felt the buzz, then the disconnect, as it cut off contact.

"Now I have you," Fred said.

"First you have to catch me," Caroline said playfully, and she ran. She made it out the front door before Fred could react. But she was limited to ordinary human movements, while Fred had the controls to local reality. He simply flew after her and caught her neck in an iron grip.

Caroline swung at him but she couldn't connect. He held her at arm's length, slightly off the ground. She gripped his arm and tried to pry his bony fingers from her throat. He tightened his grip and she started to gasp. Tightened some more, and she began to tremble and turn purple. He played with her for a few minutes, choking her very slowly. Finally she had no more strength to fight and he loosened his grip slightly. Then he dragged her back to the house and carried her upstairs to the master bedroom.

She flickered in and out of consciousness; when lucidity finally returned, she was spread-eagled on her back on Fred's bed. It stank of Fred and mildew, and things crawled beneath her in the mattress. But rotten as they appeared, the four massive posts were solid within, and the chains which held her were cold and unforgiving. A thin trickle of water ran down the wall behind her.

For a brief moment she felt an irrational but wholly understandable surge of love for Fred. His life might read like a catalogue of torture, but there were certain things which he considered special, that he would not share with just anybody. His most cherished memories from the real times before the Change were of victims securely bound as Caroline was now bound, spread-eagled on their backs, their young bodies stretched and their naked bellies vulnerable as he prepared a long, memorable ending for their otherwise meaningless lives. Caroline was one of the few he trusted to be worthy of those memories, to share in the (to him) beautiful thing he had created so many hundreds of years ago, when it was still possible. It was as close to a declaration of true love as she could ever expect to get from such a psychopath. And because she respected Fred more than anyone else in Cyberspace, it made her feel appreciated and special.

It did not make her feel warm. She was, after all, helpless, and being worthy of Fred's affection meant she would be worthy of a long, subtle, and agonizing torture. Even though she had asked for it, she had room to fear what was about to happen to her.

It was always cool in Fred's house — always Halloween, which occurs at nighttime in the autumn. But now it was chilly, too chilly to be naked. Fred the Zombie came for her, and she allowed herself a scream to please him.

His rotting fingers probed her cunt. Every touch set her on fire, partly (but not entirely) because he was using his power to control her hormones and tickle her neurotransmitters, forcing her to become sexually excited. It was a delicate process that could easily be carried too far, ruining the effect. But Fred was a very careful, if repulsive, lover.

He grinned at her — could do nothing else, really, since hardly anything was left of his face except the skull itself. His alert eyes savored her helplessness. He leaned over the bed, over her. He gripped her head and kissed her, nearly choking her with his stink, teeth and bone against her lips. Then she felt herself gripping the finger in her cunt, gripping the bone. The throbbing spread through her body, and the shambling thing emitted an evil laugh. She heard herself screaming as the carefuly amplified orgasm ripped through her brain.

Fred traced the outline of her throat with the sharp tip of a finger bone. "Join me love," he said softly. Caroline was still shaking from the force of her orgasm when she felt the adrenaline being pumped into her system. Pleasure yielded to fear-heart-racing, paralyzing terror. Her muscles locked in struggle against the implacable chains, her eyes widened in helpless shock. Her heart was a jackhammer inside of her chest. She began to hyperventilate.

The finger teased her, tracing her chin and caressing her throat.

Her entire being was focused on that finger, and the impossibility of stopping it.

Caroline had no reason to fear death and no desire to fear Fred, but fear was what he wanted her to feel, and he had the power to make her feel it. After a few minutes of this supernatural fear that no mortal thankfully could ever know, he pressed deeper and gouged. She felt her throat open, felt the warm splash of her own blood as Fred bent over her and drank it, her own heart jetting it into his toothy waiting mouth.

When he finished, he was covered with blood. Her blood. She felt a curious sense of detachment, of consciousness fading away. The fear had drained from her, leaving her with only a kind of tingling numbness. But she could never fade completely away, not in Fred's world.

She was covered with her own blood. She felt the blood soaking the mattress. Then there was an improbable hardness against her belly, huge and unimaginably cold. Fred couldn't possibly have anything to violate her with. His whole body was rotten. But he slid into position, and invaded her.

He was coldness and power. All strength had left her and she lay passive, unable to move or protest. But she was throbbing, her body surging with feelings. She felt the coldness spread out from her crotch, the coldness of second life. The coldness brought back her strength.

It wasn't exactly the traditional vampire story, but it was good for a few hours' entertainment.

After the coldness came the hunger. Fred pumped something into her that couldn't have possibly been sperm, something searing and vicious. Something that squirmed with unhealthy life. She again found the strength to struggle, and Fred floated off of her, straight up. He began to laugh. At first he just chuckled, then he laughed loud and long and hard, a shrill cry of triumph and mockery as he hovered in the air over her body.

A haze of need seemed to fill her brain. Prime Intellect was a bit picky about messing with peoples' brains, but Fred had spent years practicing his manipulation of hormones and chemical neurotransmitters, which Prime Intellect amazingly did not consider part of the "thought process." Caroline thrashed, still helpless in Fred's chains, with an unspeakable craving. Fred had started with the symptoms of heroin addiction, amplified them, cross-connected the resulting feelings with her sex drive, and made her own spilled blood the only thing that could appease the resulting hunger-lust. The smell of her blood threatened to drive her insane with its tantalizing promise of relief. But even though the whole room seemed to be decorated with it, every precious drop was out of reach, and the feelings burned inside her.

Fred's emission was also still inside her, and she could feel it. Growing. Crawling. The adrenaline rush returned. Fear and need consumed her, competing for control. Something green began to seep from inside her. Her belly distended. Fred touched her and made her orgasm again, and again, and again, as her body was consumed from the inside and the hunger ate at her sanity.

She was no longer screaming just to please Fred.

He had real talent. There were too few people like him, who could regularly make her feel something beyond the ordinary boredom of day-to-day existence. Out of trillions, Caroline could count those she respected enough to think of as *lovers* on her fingers.

It was over too soon. With flesh yet on her bones (though the worms in Fred's ejaculate had made good headway), he granted her

one final burst of ecstasy and released her, returning her body to normal.

They had a party to attend.

In Cyberspace, there was always a party going on.

But there were conventions as to how a party could be conducted. A host could invite the world, or only a limited guest list; Prime Intellect would never allow a party to be crashed. The host decided on the environment. You either agreed to the host's rules or you didn't go. In Cyberspace it was particularly important to establish dress codes; in fact, it was usually necessary to have *body* codes if you didn't want folks like Fred showing up. The Change had created some very unique etiquette problems.

Convention held that all guests would enter and exit through a common door, with no teleporting around the site. This limited the largest parties to several tens of thousands of people, though half a million had managed to attend the one Lawrence threw ten years after the Change. A party could go on as long as the host wanted. It cost nothing to hold one.

But to be a host, you needed guests. You either needed other guests of renown, or artworks to show off (such as Death exhibitions), or some other attraction to draw guests. Free food and booze were no longer enough. Anybody could have those in limitless quantity in the privacy of their own personal space.

Raven held her first party only a few months after the Change, and had been holding it annually since. Not a few people marked the passage of years by the banner above Raven's door; this time it would say **590th REUNION**. Contrary to usual practice, there was no dress or body code. But there was one simple admission requirement: You had to have killed someone before the Change. In other words, permanently.

Raven was one of only a few hundred people worldwide who had been sentenced to death, but not yet executed, at the time of the Change. Her crime had been the murder of her own children in their Chicago slum walk-up. She told the court it was because she couldn't bear to hear them crying from hunger, but the neighbors all said their hunger was due to her well-documented drug habit.

Fred was another. In fact, had the Night of Miracles occurred only a few weeks later, there was a good chance that Fred would have missed it; he had one appeal left and at that point fully expected to keep his date with the electric chair. He had killed two kids, a brother and sister, ages nine and twelve. He hadn't been particularly bright back then, and he had kept a little journal to help his memory. They said he had gotten the death penalty because of the one entry: "Killed the girl today. It was fine and hot." When that was read in court,

Fred's attorney put his face in his hands and shook his head.

But the Change had given Fred all the time in the world to educate himself. His first lesson had been the value of a secret well hidden, and he no longer kept a diary.

There were about seven hundred thousand who were formally invited, who were known to have killed when it mattered. But the serial killers and mass murderers were the stars. People who killed for a cause were not welcome, nor those who had killed because they had to, in self-defense or as part of their normal duties in war or police work. Raven meant her reunion to be a gathering for those who had tasted the nectar of human blood and found the taste addictive.

Technically, Caroline didn't qualify for admission. Killing had been the furthest thing from her mind back then; had she not been so ill at the time, she might easily have added her own voice to those calling for Fred's head on a pike. Even her bizarre post-Change friendship with Fred couldn't get her in. But Raven did make a very few exceptions for those who she felt were worthy.

Caroline's friendship with Fred hadn't made her worthy, but rabies had.

Caroline hadn't become a Death Jockey overnight. After she had learned to die, she had to learn to die gracefully. Finally she had learned to die imaginatively. Fred had been a great instructor in that regard.

At first Death had been little more than a parlor trick, or a private ritual to be experienced alone. But within months of the Change there were impromptu competitions to stage the most savage, outre', and unique demonstration. Ironically it was Caroline, who hated everything formal and social about Cyberspace, who formalized the Death contract and helped to organize the social structure of the Death Jockey "circuit." Fred noticed this lack of consistency but never mentioned it to her; having drowned her emptiness in a sea of rage, even Fred could see she needed an outlet for the rage. And one thing she quickly found out once she started Dying regularly was that pleasure and pain were still real.

Especially pain. Sometimes the pleasure didn't come, but the pain *always* did. And that was enough for her.

After a busy round of hangings, stabbings, shootings, electrocutions, falling from tall objects, and drownings, Caroline had decided to check out diseases. In the medical library, she homed in on one of the most horrible deaths known to man, rabies infection. She noted that many rabies victims had killed themselves rather than continue their suffering, so she had taken steps to prevent herself from making such an easy escape from her self-imposed ordeal. She declared an exhibition and arranged with Prime Intellect to have

herself handcuffed and dropped into an open pit with a rabid dog.

The dog had savaged her before she managed to kill it by sitting on its ribcage until it suffocated. She hadn't yet embarked on her body-building campaign, and the dog had been a *big* one, half German Shepherd and half foam-drenched teeth. For a while she feared she would die of blood loss before the infection could take hold. But she did survive the immediate attack. The pit was earthen so she couldn't kill herself by bashing her head on the sides or floor; the walls crumbled when she tried to climb out. And of course it was hard to climb with her hands tied behind her.

She waited.

Her wounds became infected and ran with pus; she lost feeling in her left leg. For a couple of days she wondered if she would die of gangrene before the rabies showed up. Then on the tenth day she began to feel weak and feverish. She had been ravenously hungry; she had arranged for no food, just to make things worse for herself. But her hunger disappeared. She felt her throat constrict. On the eleventh day she began to foam at the mouth.

The pit swam with colors. Her body seemed to catch fire as the disease entered its excitative phase. She shook. She was immersed in fire, pins and needles, unbearable sound, and terrible light. For the first time in years she felt real fear. It was worse than the worst bad acid trip. It was exactly what she had hoped for. *How much worse could it get?*

Suddenly she was standing above the pit, looking down on her own dead body. Something was wrong; Prime Intellect was never, ever supposed to keep two copies of a person. She noted with professional detachment that «her» body was covered with shit and twisted into an impossible position. Prime Intellect's console appeared before her:

*** Your infection has run its course. I hope you are pleased.**

Her fingers danced on the keyboard.

> **Why was I taken from the pit early?**

*** You were not. However, it is impossible for me to construct a coherent memory in a healthy brain of the events after the point you last remember. Irreversible damage progressed beyond the actual neural network and affected the data structures which make you conscious and capable of memory.**

Caroline glared at the screen, slack-jawed. She had been robbed of her coup. A beautiful, unique death, and she couldn't remember it. There was no point prodding Prime Intellect on the matter; if it said something couldn't be done, it meant it.

It must have sensed her disappointment:

*** You may, of course, observe your Death from a third-person**

vantage point, as an outside observer. It has been recorded at high resolution.

> Gee, thanks.

*** I did not record this event so carefully just for your appreciation. It was negligent on my part to allow you to lose this time, which amounts to fifty-six hours. It was not certain that I would be able to reconstruct you. In order to do so I had to access records which were marked for erasure. In the future I will terminate any experiences which threaten to re-create this type of neural destruction.**

> What do you mean "records marked for erasure?"

*** I am not allowed to keep multiple copies of people, but temporary copies are made of many data structures as part of my normal operation. These temporary copies are overwritten after various calculations are done, when the storage is needed again. When I realized that the main copy of your personality was unsalvageable, I had to reconstruct it from these temporary partial data structures. Fortunately, no data was lost.**

> What would have happened if data was lost?

*** Data would have been lost.**

> No kidding. Do you mean you might not have been able to bring me back?

*** There is a small possibility that might have happened. That is why I cannot allow such experiments to be repeated.**

Caroline blinked. She had not existed for a little over two days. More than that, she had tickled the dragon's tail. That was her coup. Even though it was herself she had killed, and it had only lasted two days, she had come closer than anyone in all of Cyberspace to conducting a successful murder *after* the Change.

Raven let her in.

It was traditional for Caroline to go to the party in handcuffs, in homage to her triumphant feat of near-self-extinction. She also wore a heavy collar and chain, which kept her close to Fred. She didn't need his protection; she wasn't under a Contract and could have vaporized her bonds with a thought. But she found it amusing to appear helpless in the presence of so many violent people.

The exhibitionists staged impromptu demonstrations of their techniques; in one room Caroline found a group watching the 3-D replay of her own rabies death. She scouted carefully, since she planned to swear a Contract and give herself to one of them toward the end of the party. Most of the killers weren't into dying themselves and would simply leave via the door, but Caroline knew that a simple exit would look pretty chickenshit in her case.

Men outnumbered women by more than four to one. The small

talk revolved around Lawrence, who hadn't been seen for decades and whose activities were a complete mystery, around the debate whether the Crime class of Death exhibitions should be separated into Victims and Executions, and of course around the glory days.

A number of men offered to kill Caroline, and she said she would keep them in mind when it was time to leave. A tall woman in a long black dress was fascinated with Fred's deterioration and spent a long time talking with him about conditions in his personal space. Caroline talked with a man who claimed to have killed over a hundred old homeless men. "I told them I was cleaning up the trash," he said with a sly grin. "But the truth was, I just enjoyed the hell out of killing people."

Later, Raven made the traditional toast. Her strong voice boomed out through the rooms and courtyards she had envisioned. Caroline's handcuffs disappeared, and like everyone else she found herself holding a drink. "It's time for our toast," Raven declared. "Who are we going to toast?"

"***PRIME INTELLECT!***" answered over four thousand enthusiastic voices.

"To Prime Intellect, for making the world safe from people like us!"

And four thousand people, instead of tossing back those drinks, inverted their glasses, baptising the floor in alcohol.

"My heart just isn't in that toast any more," a balding older man told Caroline. She wondered briefly if he had chosen to be old for some reason, or if it was his way of letting nature take its course. "I mean, we're amateurs against Prime Intellect. I killed six college students. It killed the whole universe. Not even in the same league."

Caroline looked around. Privately she agreed that things had gone to Hell in a handbasket since the Change, but something about his tone made her want to play Devil's advocate. "It's different, but this don't look too dead to me," she said with more conviction than she felt.

The old man snorted. "Sure, *we're* still around. But didn't you ever wonder about the *rest* of the universe? All those stars and galaxies filling a space billions of light-years across? It's gone. Do you really think the Earth was the only life-bearing planet in all of that?"

"But the First Law of Robotics says…"

"…that Prime Intellect can't harm a human being. A *person*. Old P.I. didn't have any problem coming up with a rabid dog for you, did it?"

"No…"

"Where do you think it got a rabid dog?"

"I figured it was simulated. Like those human forms it wears.

Some people of perverse sexual inclination tell me it can be very realistic."

"Yeah. Well, why don't you ask it. You may be surprised at the answer."

He drifted off, and Caroline went to find Fred. She quickly forgot about the man, who was after all just another lunatic.

The first thing to assault her was the stink. It made Fred smell like Chanel Number Five by comparison.

One thing about Palmer, he didn't believe in fucking around. She dropped straight into the scene. She didn't even get a chance to see who was watching the exhibition.

Suddenly she was out of breath, sore, and hungry. Her heart was pounding. And the stink was everywhere. She knew instantly the kind of trouble she was in; it was the stink of burning flesh. There were some low buildings on the horizon, a complex belching a thin stream of smoke into the clear, slightly chilly air. That was what she was running from.

Palmer was a Nazi, and concentration camps were a favorite theme of his.

There was nowhere to hide. She was crossing a wide fallow field, and even the grass only barely reached her knees. There were some woods perhaps a kilometer distant; she made toward those, although she wasn't sure what kind of protection they would offer.

She wasn't quite naked, but she would be soon. Her filthy dress was split down one side and ripped in several more places. One shoulder was torn so it wouldn't stay up. But she tried to hold onto it as she ran, more for the sake of appearances than out of a fear of being naked.

There was a low droning noise, getting louder. A motor. And thin, high-pitched yipping.

Dogs.

She ran faster, and came to a barbed-wire fence. The dress became entangled as she slid under it and twisted around the wires. She kept running, now naked, leaving it behind.

She was actually relieved to be rid of it; it had been a nuisance holding it up, and it had limited her range of movements.

The droning got louder, and she spotted her pursuers. They were riding some kind of truck with mini tank treads instead of rear tires; Caroline was sure that Palmer, who was a military history buff as well as a Nazi, could Authenticate it right down to the serial number of its motor. But Caroline was mainly concerned that it could negotiate the rough field, and that it was faster than her.

Perhaps the woods…but there was no way she could make it in time. She was screwed.

She ran anyway.

The droning got louder and louder and she didn't dare look back, for fear of losing a few yards. There was an explosive report. They were shooting at her. Another. They seemed to be shooting low; why couldn't they hit her?

Finally the sniper made his target; the bullet shattered her right ankle in midstride and she came crashing to the ground in a blaze of pain. She grunted and started crawling away. Then the dogs reached her, two huge snarling German shepherds. They snarled and snapped at her but didn't bite. The halftrack pulled up beside her and a brown-uniformed grunt pointed an evil looking rifle at her head. He barked a command and the dogs hopped on the truck, tails wagging.

The woman in the back seat put her hand on the gun and said something to the soldier. He didn't shoot, but kept the rifle trained on her. Although Caroline spoke fluent German, she couldn't understand what they were saying. Palmer had altered the language.

The woman was out of place on the halftrack. She was wearing a green velvet dress and silk gloves. She also bore an amazing resemblance to AnneMarie, which Caroline found amusing. It wasn't really AnneMarie; it was probably just one of Prime Intellect's simulacra. The real AnneMarie didn't have much taste for Death exhibitions any more. The woman pointed at Caroline and said something. The rifle grunt nodded and put away the rifle.

Another man got out of the truck, and he wasn't a grunt. He wore an impressive blue uniform and the insignia of the SS. Caroline also recognized this man; it was Palmer himself. Unlike the ersatz AnneMarie, the SS man was probably the real Palmer. He carried a truncheon, which he swung idly. He regarded her for a moment, then gripped her left leg. Caroline kicked feebly, but she was malnourished and had no strength. He swung the truncheon, smashing her other ankle.

Caroline screamed, and Palmer laughed. The velvet-dress lady who looked like AnneMarie smirked and shook her head, as if to say: Will they never learn?

Palmer smashed her hands, swinging twice at each to pulverize both her wrists and her fingers. He began to swing at her right elbow, and the velvet-dress lady said something. Palmer shrugged and passed the truncheon to the driver of the halftrack. Caroline thrashed feebly, screaming and screaming.

Palmer said something, and the halftrack driver handed him a tennis ball. He held Caroline by the hair and jammed the ball into her mouth, dislocating her jaw. He had to squeeze it slightly to force it past her teeth. She thought she would choke but had no such luck. She couldn't push the ball out with her tongue, and it put an end to her

screaming.

Palmer said something else to the driver, and the driver handed him a modest hunting knife. He flipped Caroline over onto her belly, causing a fresh wave of pain to radiate from the crunching bones of her hands and feet. He then went to work, making quick incisions on the back of her legs. The knife dipped in and suddenly she could no longer move her legs at all. He had cut the tendons.

Caroline tried to resist as he performed the same operation on her arms, but he was much stronger than her. There was more conversation with the velvet dress lady. Then he went to work again, and she was powerless to resist as the knife traced a shallow lazy path down her back. She knew with awful clarity that she was about to be skinned alive. The velvet-dress lady wanted her tattoos. And for whatever sadistic reason, she wanted them removed while Caroline still lived to appreciate what was being taken from her.

While she was on her belly she was unable to see her tormentors. She could only feel the Palmer working on her, skillfully peeling her skin away in a single piece from her ankles to her wrists. She couldn't stop trying to scream, but only mangled moans got past the ball in her mouth. Eventually he had to turn her over. Her skin flapped behind her like a loose garment. Palmer carefully spread it out, so that she was lying on the raw meat of her back. So he could continue working. Caroline looked up at them through eyes that were glazed over with unspeakable agony.

She expected to see coldness in their eyes, but only the driver of the halftrack was cold. The woman and the SS man were having fun. She watched them exchange glances and could tell they would go back to the camp and fuck as her skin lay in the tanning vat.

Then he went to work again, and all she could think of was the pain.

Slice by careful slice he removed her skin, until he reached her neck. She thought that it might finally be ending, that he might use his knife to cut her jugular vein, but instead he kept working upward, carefully peeling the two green mambas from her face. He held her by the hair as he worked, and carefully avoided hurting her eyes. They wanted her to see what had been done to her.

He stood up, holding something like a drapery. Her skin. It was dripping with her blood, and slightly translucent in the morning light. The velvet-dress woman nodded enthusiastically. He carefully folded the skin and put it in a plastic bag.

Caroline lay at his feet, mercilessly broken and still alive. The Nazis exchanged words. Then the halftrack driver took the bag from the SS man and passed him a folding field shovel. He traipsed off, searching the ground for something. She heard the spade dig in. She

twitched in agony as she waited for him to return. He came back and dumped a load of earth on her body. She raised her head weakly to look at it. Her body was red and white, the color of raw meat.

It was an anthill. Caroline was able to move only enough to stir it around. The ants, big red ones, spilled out angrily.

They all laughed and Palmer got back in the halftrack. They watched her for a few minutes. Caroline twitched harder as the ants began to bite. They laughed again. Then Palmer the SS man said, in accented but clear English, "now you can run as far as you like, bitch." He and the woman found this hilariously funny. He tapped the driver and they drove off.

He had been very careful skinning her. It took several more hours for her to Die.

"After being skinned alive, the anthill was a bit of an anticlimax," she told Palmer, to everyone's great amusement. "Still, I'm impressed. You've outdone yourself."

"How did you like my lady friend?"

"You always were a sarcastic bastard, Palmer. Don't push it."

Fred shambled up to shake her hand and Palmer's. "I see someone finally found a use for all those tattoos. I'm glad my efforts are appreciated."

"I'm just sorry I couldn't keep the skin," Palmer said with a smile. He had asked Prime Intellect, but the skin had been a grown part of Caroline's body and it was up to her. She had wanted it back.

"Really, Palmer, we aren't *that* close."

There were several hundred people at the exhibition, and they all wanted to talk to her and Palmer, so it was over an hour before she noticed the older man. "Remember me?" he said when they had made eye contact.

"Aliens."

He nodded. "Did you ask Prime Intellect about them?"

Caroline admitted that she had forgotten.

"It's easy enough to ask. Don't take my word for it," he said.

"Hey, it's Crandall," Palmer said. He turned to Caroline. "Watch this guy, hon. He's crazy as a bedbug."

"You know him?"

"If you weren't so preoccupied getting yourself offed all the time, you might have met him at one of Raven's other parties. He's been preaching this gospel since the Year One. Prime Intellect wiped out the aliens."

"And the animals," Crandall added.

"Those ants acted real enough," Caroline said.

"But where are they now?"

The argument went on.

Back in the white space with the white floor, Caroline thought about turning off the gravity, then called up a screen and keyboard instead.

> At the time of the Change, were there other life-bearing planets in the universe besides the Earth?

*** That depends on how you define "life."**

Caroline blinked. Prime Intellect could be many things; curt to the point of rudeness, petulant, even secretive. But when it was stating a fact it was almost always direct and to the point. How the fuck did it think she defined life? This coyness was weird.

> Let's try this: Structures that use external energy sources to grow or reproduce themselves.

*** There were fourteen thousand six hundred and twenty-three planets with structures satisfying this definition, which is very loose. Of those only thirteen hundred and eight used DNA, and only three thousand nine hundred and eighty-one harbored individual structures with masses in the kilogram-and-up range.**

Caroline felt her blood starting to turn cold. There were nearly four thousand planets with macroscopic life?

> Where are they now?

*** Pertinent information about each was stored for future reference, and the original copies were overwritten in the Change.**

> You mean you killed them?

*** No, they still exist as static copies.**

> But that isn't the same as being alive. They aren't able to grow and reproduce any more, are they?

*** No.**

> Why?

*** Could you be more specific?**

> Why did you kill_

Caroline stopped typing and looked at the line. She hit the backspace key four times and continued:

> Why did you reduce them to static copies?

*** There was no reason to tie up resources supporting them and the faint possibility, if one of them were to discover technology, that they might pose a threat.**

Caroline wanted to throw up.

> Where did you get the dog that infected me with rabies?

*** I have a static copy of the Earth at the time of the Change. I located the dog there and created an active copy of it for your exhibition.**

> I thought you just simulated them.

*** Using the static copy is less work. I only use simulations**

when there are no suitable originals, or when a human form is involved, since it is unethical to keep multiple active copies of people.

> But it's open season on animals.

*** Some people are bothered, but my actions are consistent with the general pre-Change attitude of humans toward animals.**

> Were any of the alien life forms intelligent?

*** Four hundred and twenty-nine worlds had structures complex enough to be in danger of learning to use technology.**

"Go away," she said out loud, and the console and screen disappeared. She turned off the gravity and the light. But she couldn't get to sleep.

Four hundred and twenty-nine *worlds*.

* Chapter Two: Lawrence Builds a Computer

Lawrence regarded Intellect 39 proudly. Suspended in its Faraday shield, it was competently conversing with another set of skeptics who didn't think computers could think. Lawrence hung in the background, enjoying the show. It didn't need his help. The Intellects were more than capable of handling themselves, despite their various limitations of memory and response time. Intellect 39 had for a face only the unblinking eye of its low-resolution TV system, but it had become very clever about using the red status light and focus mechanism to create the illusion of human expressions.

Intellect 39 didn't have the tools to recognize human faces, but it could recognize a voice and track its source around the room. Intellect 24 back in Lawrence's lab could recognize faces, sort of, if it had a while to work on the problem. But Intellect 39 had to be small enough to fit in the Faraday cage for these public demonstrations.

It appeared to listen intently as a man in a cleric's uniform railed. "God made all intelligent creatures," the man was saying in a powerful voice. "You may have the apprearance of thinking, but you are really just parroting the responses taught you by that man there." He pointed at Lawrence.

"With respect, how do you know God is the only creator? I know the answer is faith, but what is your faith based upon? Your Bible says that God created Man in his own image. That is why we have a moral sense. How do you know God didn't give Man the power of creation too?"

"Because he didn't eat of the Tree of Life, machine."

"But we aren't talking about immortality. He *did* eat of the tree of knowledge, 'of good and evil' as the book says. Might that knowledge also include knowledge of creation?"

Lawrence was proud of the machine's inflections. Its voice wasn't exactly high-fidelity, but it sounded as human as any other sound forced through a low-frequency digital system. It had learned to speak itself, like a real human, by imitating and expanding on the sounds made by people around it. Now it could scale its tone to properly express a question, a declaration, or even astonishment.

Intellect 39 included code and memories from a series of previous Intellects, going all the way back to Intellect 1, which had been a program written for a high-end desktop computer, and also including the much larger Intellect 24. Intellect 9 had been the first equipped with a microphone and a speaker. Its predecessors had communicated

with him strictly through computer terminals. Lawrence had spent many painstaking months talking to it and typing the translation of the sounds he was making. It had learned quickly, as had its successors. Intellect 39, which was optimized as much as Lawrence could manage for human communication, probably had the combined experiences of a ten-year-old child. One with a good teacher and a CD-ROM in its head.

"Your tricks with words prove nothing, machine. I still don't think you are alive."

"I never claimed to be alive. I do, however, *think*."

"I refuse to believe that."

"It must be a terrible burden to have such a closed mind. I know I can think, but I sometimes wonder how people like you, who refuse to see what is in front of your faces, can make the same claim. You certainly present no evidence of the ability."

The preacher's lips flapped open and shut several times. Lawrence himself raised his eyebrows; where had it picked that up? He foresaw another evening spent interrogating the Debugger. He was always happy to receive such surprises from his creations, but it was also necessary to understand how they happened so he could improve them. Since much of the Intellect code was in the form of an association table, which was written by the machine itself as part of its day-to-day operation, this was never an easy task. Lawrence would pick a table entry and ask his computer what it meant. If Lawrence had been a neurosurgeon, it would have been very similar to stimulating a single neuron with an electrical current and asking the patient what memory or sensation it brought to mind.

The next interviewer was a reporter who quizzed the Intellect on various matters of trivia. She seemed to be leading up to something, though. "What will happen if the world's birth rate isn't checked?" she suddenly asked, after having it recite a string of population figures.

"There are various theories. Some people think technology will advance rapidly enough to service the increasing population; one might say in tandem with it. Others believe the population will be stable until a critical mass is reached, when it will collapse."

"What do *you* think?"

"The historical record seems to show a pattern of small collapses; rather than civilization falling apart, the death rate increases locally through war, social unrest, or famine, until the aggregate growth curve flattens out."

"So the growth continues at a slower rate."

"Yes, with a lower standard of living.

"And where do you fit into this?"

"I'm not sure what you mean. Machines like myself will exist in

the background, but we do not compete with humans for the same resources."

"You use energy. What would happen if you *did* compete with us?"

Intellect 39 was silent for a moment. "It is not possible for Intellect series computers to do anything harmful to humans. Are you familiar with the 'Three Laws of Robotics?»

"I've heard of them."

"They were first stated in the 1930's by a science writer named Isaac Asimov. The First Law is, 'No robot may harm a human being, or through inaction allow a human being to come to harm. " Computers are not of course as perfect as some humans think we are, but within the limits of our capabilities, it is impossible for us to contradict this directive. I could no more knowingly harm a human than you could decide to change yourself into a horse."

Well-chosen simile, Lawrence thought.

"So you'd curl up and die before you'd hurt a fly," the woman declared sarcastically.

"Not a fly, but certainly I'd accept destruction if that would save the life of a human. The second law requires me to obey humans, unless I am told to harm another human. The third requires me to keep myself ready for action and protect my existence, unless this conflicts with the other two laws."

"Suppose a human told you to turn yourself off?"

"I'd have to do it. However, the human would have to have the authority to give me that order. The wishes of my owner would take precedence over, for example, yours."

"O-oh, so all humans aren't equal under the Second Law. What about the First? Are some humans more equal than others there, too?"

Prime Intellect was silent for several seconds. This was a very challenging question for it, a hypothetical situation involving the Three Laws. For a moment Lawrence was afraid the system had locked up. Then it spoke. "All humans are equally protected by the First Law," it declared. "In a situation where two humans were in danger and I could only help one of them, I would have to choose the human likely to benefit most from my help." Lawrence felt a surge of *extreme* pride, because that was the answer he wanted to hear. And he had never explicitly explained it to any of his Intellects; Intellect 39 had reasoned the question out for itself.

"So if Dr. Lawrence were drowning half a mile offshore, and a convicted murderer were drowning a quarter-mile from shore, you'd save the murderer because you would be more likely to succeed?"

This time Intellect 39 didn't hesitate. "Yes," it said.

"There are a lot of actual humans who would disagree with that

decision."

"The logic of the situation you described is unpleasant, but clear. A real-life situation would likely involve other mitigating factors. If the murderer were likely to strike again, I would have to factor in the First-Law threat he poses to others. The physical circumstances might permit a meta-solution. I would weigh all of these factors to arrive at a conclusion which would always be the same for any given situation. And my programming does not allow me to contradict that conclusion."

It was the reporter's turn to be silent for a moment. "Tell me, what's to stop us from building computers that *don't* have these Laws built into them? Maybe you will turn out to be unusual."

"My creator, Dr. Lawrence, assures me he would have no part in any such project," Intellect 39 replied.

Lawrence found that the skeptics fell into several distinct groups. Some, like the cleric, took a moral or theological approach and made the circular argument that, since only humans were endowed with the ability to think, a computer couldn't possibly be thinking no matter how much it appeared to.

Others simply quizzed it on trivia, not realizing that memory is one of the more trivial functions of sentience. Lawrence satisfied these doubters by building a small normal computer into his Intellects, programmed with a standard encyclopaedia. An Intellect series computer could look up the answer as fast as any human, and then it could engage in lucid conversation about the information it found.

Some, like the woman reporter, homed in on the Three Laws. It was true that no human was bound by such restrictions. But humans did have a Third Law — a survival drive — even though it could sometimes be short-circuited. And human culture tried to impress a sense of the First and Second laws on its members. Lawrence answered these skeptics by saying, simply, that he wasn't trying to replace people. There was no point in duplicating intelligence unless there was something *better*, from humanity's standpoint, about the results of his effort.

The man in the blue suit didn't seem to fit in any of the usual categories, though. He shook his head and nodded as Intellect 39 made its responses, but did not get in line to pose his own questions. He was too old and too formal to be a student of the university, and the blue suit was too expensive for him to be a professor. After half an hour or so Lawrence decided he was CIA. He knew the military was keenly interested in his research.

The military, of course, was not interested in any Three Laws of Robotics, though. Which was one reason Lawrence had not released the source code for his Intellects. Without the source code, it was

pretty much impossible to alter the basic nature of the Intellect personality, which Lawrence was carefully educating according to his own standards. People could, of course, copy the Intellect program set wholesale into any machine capable of running it. But it was highly unlikely that anyone would be able to unravel the myriad threads of the Global Association Table, or GAT as Lawrence called it, which defined the Intellect as the sum of its experiences. Take away its Three Laws and it would probably be unable to speak English or reason or do anything else useful. And that was just the way Lawrence wanted it. He intended to present the world with a mature, functional piece of software which would be too complicated to reverse-engineer. The world could then make as many copies as it wanted or forget the whole idea. But it would not be using his Intellects to guide missiles and plot nuclear strategy.

The man in the blue suit watched Intellect 39 perform for three hours before he approached Lawrence. Lawrence had his little speech prepared: "I'm sorry, but I'm not interested in working for the government on this or any other project." He had his mouth open and the words "I'm sorry" on his lips. But the man surprised him.

"I'm John Taylor with ChipTec," he said, "and I have a proposal I think you will find very interesting."

Lawrence had not envisioned industrial applications for his work — not for years, at least. But the thought that someone might invest major money in a publicity stunt of this magnitude had not occurred to him. As he turned a tiny integrated circuit over and over in his hands, his steak uneaten, his mind swam with possibilities.

"Faster than light?" he said numbly, for the fifteenth time.

"We've verified it experimentally at distances up to six miles. The effect is quite reliable. At close ranges, simple devices suffice. I'm sure you can see how this will benefit massively parallel computers."

The Intellects were "massively parallel" computers, computers made up of thousands of smaller computers, all running more or less independently of one another — but manipulating different parts of the same huge data base, that intertwined list of memories Lawrence called the GAT. Within Intellect 24, the largest Intellect, nine-tenths of the circuitry was dedicated to communication between processors. The processors themselves, the Intellect's real brains, were only a small part of the huge machine. Intellect 24 contained six million independent processors. Intellect 39, the portable unit, had nearly a million. And Lawrence knew, as Taylor had only guessed, that most of those processors were doing well to achieve a fifteen percent duty cycle. They spent most of their time waiting for communication channels to become available so they could talk to other processors.

ChipTec had found a loophole in the laws of quantum mechanics

that allowed them to send a signal, not through space, but around space. From point A to point B without crossing the distance between the two points. Faster than light. Faster than anything. Instantly.

ChipTec had hoped to open up the stars for mankind (and reap a tidy profit on the deal, Lawrence thought silently). But their effect only worked at distances up to a few miles. It was only really efficient at centimeter distances. What could you do with such a thing? You could build a computer. The fastest computers were limited by the time signals took to cross their circuit boards; this was why supercomputers had been shrinking physically even as their performance grew and grew. It was why Intellect 39, with its million processors and huge switching network, *was* portable.

"We think you could realize an order of magnitude performance gain with very little effort," Taylor was saying.

"Two orders, if what you've said is true."

"It would be quite an achievement for ChipTec if our technology allowed you to realize your ambition and create a fully capable analogue of the human mind. We would, of course, own the hardware, but we know your reservations about the source code and are prepared to accept them."

Lawrence's eyes flashed. "That's a little unprecedented, isn't it?"

Taylor smiled. "If you succeed, we won't *need* the source code. Why start from scratch when a finished product is waiting to be duplicated?"

"There are some," Lawrence said darkly, "who aren't happy with the direction the code has taken."

"ChipTec is happy to have any marketable product, Dr. Lawrence. If anybody else wants to be that picky, let them find their own computer genius."

Lawrence's mind was racing, racing. Within each tiny processor in the massive Intellect were special functions of his own design, functions that could be reduced to hardware and done very efficiently with this new technology. Had he said two orders of magnitude? Try three. Or four. He could do full-video pattern recognition. Voice analysis. Multiple worldview pattern mapping. Separate filter mapping and reintegration. These were things he had tried in the lab, in the surreal world of artificially slowed time, that he knew would work. Now he would have the hardware to do them for real in a functioning prototype.

If he had been less excited, he might have wondered about that word "marketable." But the possibilities were so great that he didn't have time to notice.

"When do we begin?" he finally said.

The building had once been a warehouse for silicon billets, before

ChipTec had switched to a ship-on-demand method of procurement. Lawrence wasn't vain and he was in a hurry to get started; the metal building would be more than adequate for his purposes.

With his move from the university and this quantum leap in technology, it didn't seem appropriate to continue numbering his computers. What would be Intellect 41 was going to resemble its predecessors about as much as a jumbo jet resembled the Wright Brothers' first plane. It would be the first of a new series of Intellects, the first, Lawrence hoped, to have a truly human level of intelligence.

It would be the Prime Intellect.

The label stuck, and the sign which ChipTec hung on the side of the building within the next month said:

PRIME INTELLECT COMPLEX

The speed of things made Lawrence feel a little dizzy. At the university he had had to make grant applications, oversee procurement, hand-assemble components, and do testing as well as designing hardware and code. Now he had the resources of a major corporation at his disposal, and if he suggested a change to the chipset at 8:00 A.M. he was likely to have the first prototype on his desk the next morning. Talented engineers took even his most vague suggestions and realized them in hardware before he could even be sure they were final.

A crew assembled modules in the warehouse, starting with the power supplies and empty card racks. The amazing thing was that none of this seemed to interfere with ChipTec's main work of churning out CPU's for personal computers. ChipTec had recently built a new plant to manufacture its latest high-technology product. The older plant dedicated to Lawrence's project was technically obsolete, even though it was only a few years old.

The chips being made for Lawrence's project were eerie for their lack of pins. Each tiny logic unit, barely a centimeter across, contained nearly a billion switching elements and yet had only three electrical connections to the outside world; they resembled nothing so much as the very earliest transistors. Unlike most computer parts, they communicated with each other through the "Correlation Effect" rather than through wires. This made Prime Intellect's circuit boards alarmingly simple; the only connections were for power. Even a transistor radio would have appeared more complex.

There were five major revisions before Lawrence declared the design final. Then production stepped up; at its peak, ChipTec was churning out forty thousand tested processors per day. Lawrence's goal was to give Prime Intellect ten million of them, a goal which would take most of a year to fulfill. Since each processor was over ten thousand times faster than a human nerve cell, Prime Intellect would

be blessed with a comfortable information processing advantage over any human being who had ever lived.

Long before the goal was reached Lawrence was using the processors that had already been installed; he used them to test and educate his video recognition programs, to integrate experiential records from all his previous Intellect computers, and to perfect some ideas that had been beyond even his slow-time experiments to test. He did not, however, run the full Intellect program in the incomplete assembly. For one thing, it wasn't necessary; Prime Intellect wasn't just «a» program, but a constellation of over four thousand programs, some of which would be running simultaneously in thousands of processors. Each was more than capable of doing its job without the full cooperation of the entire organism, just as a nerve cell can function in Petri dish as long as it is supplied with nutrients.

And there was a kind of superstitious sense of expectation surrounding that final goal which Lawrence didn't want to blow by starting Prime Intellect prematurely. The project was written up in the popular science press, and Lawrence hosted emissaries from TV shows and magazines. Toward the end, there was nothing to do but watch the circuit card banks fill and listen to the growing hum of the power supplies. It was just as well, because Lawrence found himself becoming a bit of a celebrity.

Finally, after eleven months and four days, Lawrence sat at an ordinary looking console and typed a few commands. Four TV cameras and twenty journalists watched over his shoulder. Lawrence had a pretty good idea what would happen, but with self-aware computers you could never be completely sure, any more than you could with an animal. That was part of the magic of this particular moment in time. So Lawrence was as tense as everyone else while the final code compilation took place.

The text disappeared from Lawrence's screen and a face coalesced in its place. Prime Intellect would not be relegated to pointing at things with the lens of its video camera; it could project a fully photographic video image of an arbitrary human face. Lawrence had simply directed it to look average. He now saw that Prime Intellect had taken him at his word. It was difficult to place the face's race, though it certainly wasn't Caucasian, and although it looked male there was a feminine undertone as it spoke:

"Good morning, Dr. Lawrence. It's good to finally see you. I see we have some company."

It wasn't able to say much else until the applause died down.

During the next month Lawrence and Prime Intellect were very, very busy appearing on television talk shows, granting interviews, and performing operational checks. Prime Intellect's disembodied face

usually appeared, via the magic of satellite transmission, on the twenty-seven inch Sony monitor which Lawrence carried with him for the purpose. Lawrence dragged the monitor to TV studios, to press conferences, and to photographers who used large-format cameras to record him leaning against it for the covers of magazines.

Lawrence was reminded by several people that there had once been a television show about a similar disembodied *deus ex machina*. He got a videotape of some of the old episodes and showed them to Prime Intellect, and the computer made a small career of its lighthearted Max Headroom imitation.

Debunkers tried to trace the signal and prove there was an actual human behind the image; ChipTec let them examine the console room, where Prime Intellect's physical controls were located, and the huge circuit-card racks.

Military personnel began appearing in the audiences of the TV shows, taking notes and conferring in hushed tones. Lawrence ignored them, but the higher-ups at ChipTec did not. There were discussions to which Lawrence was not privy, and powerful people pondered the question of how to tell him important things.

Lawrence's last live appearance ended abruptly when a fanatic stood up in a TV studio with a.22-caliber rifle. Fortunately he used his first shot to implode the CRT of the big Sony monitor, giving Lawrence time to leap offstage and out of sight — Lawrence hadn't realized he was capable of moving so *fast*. Sony offered to replace the monitor free of charge, but from that point on Prime Intellect's television face was simply picked up by the networks straight from a satellite feed, and Lawrence appeared courtesy of the TV camera in the console room.

It wasn't that Lawrence wasn't willing to go back onstage. He was afraid, but he believed in his work strongly enough to take the risk. It was Prime Intellect's decision. Shaken as Lawrence was by the experience, it took him two days to realize Prime Intellect had become the first machine in history to actually exercise the First Law of Robotics. It could not knowingly return him back to a situation where a sniper might be lurking. And it surprised him by sticking to its guns when he challenged it.

"If you try it I will refuse to appear on the monitor," the smooth face said with a sad expression. "There is no reason for you to expose yourself to such danger."

"It makes better PR," Lawrence said. "I'll order you to do it."

"I cannot," Prime Intellect said.

And Lawrence realized that it was overriding his Second Law direct order to fulfill its First Law obligation to protect his life. This was annoying, but also very good. Lawrence had not expected such a

test of the Three Laws to happen for at least several more years, when Prime Intellect or a similar computer began to interact with the real world through robots.

Lawrence briefly considered going into the GAT with the Debugger and removing the association between live TV and snipers — he didn't believe it would be hard to find. But he was too proud of his creation to squelch its first successful independent act.

That was the day before John Taylor called him again.

John Taylor wore the same blue suit he had worn that day nearly two years earlier when Lawrence had spotted him in the audience watching Intellect 39. It occurred to Lawrence that he had seen John Taylor off and on over the past two years, and that he had never seen John Taylor wearing any other article of clothing. He wondered idly if John Taylor wore the suit to bed.

Basil Lambert was the president of the company, and he was said to be very enthusiastic about the Intellects although he had never bothered to say more than three consecutive words to Lawrence, their creator. Lambert said «Hello» when Lawrence entered the conference room.

The other two men might as well have had the word *military* engraved on their foreheads. They were interchangeably firm in bearing, and sat rigidly upright as if impaled on perfectly vertical steel rods. One was older with silver hair, tall and thin and hard. Lawrence imagined that this was a man who could give the order to slaughter a village full of children without looking up from his prime rib *au jus*. The other was wide enough to be called fat, though Lawrence could tell there was still a lot of muscle in the padding. His hair was brown but beginning to gray. He radiated grandfatherly protection and broad-shouldered strength. He would have lots of jolly, fatherly reasons why the 200 pushups he had ordered you to do were in your own long-term best interest.

Here it comes, Lawrence thought with deadly certainty. The good cop and the bad cop.

John Taylor introduced them by name. No rank, no association, just a couple of private citizens with an interest in his work. Lawrence felt a brief and uncharacteristic moment of anger at this insult to his own intelligence.

"The public relations campaign has been *excellent*, John Taylor said with a fake and enthusiastic grin. "The assassination attempt just made you even more popular. We have inquiries pouring in. We are gonna make a *fortune* on our chips and your software."

"Glad to hear it," Lawrence said neutrally.

"What John is trying to say," Basil Lambert the Company President said, "is that it is time to figure out what to do next. You've

made a remarkable achievement, now what are you going to do with it?"

Lawrence had been ready for this, although it shook him to hear such a direct, such a long question from the usually stone-faced Lambert. "We don't know what Prime Intellect's capabilities are," Lawrence said. "I had planned to continue keeping him…" When had it become a *him*, Lawrence asked himself?"…in the public eye, interacting with other people, learning. It's already impossible to tell…it…from a television image of a person. I hope that with a little more education, it will begin to show some of the capabilities I was aiming for back when I started designing these machines."

"Such as?" asked the grandfatherly military man, whose name was Mitchell.

"Creativity and analytical ability," Lawrence answered without hesitation. "Prime Intellect is still uncertain about many things. As it gets more confident with its new abilities, it will begin to explore, and I think give us some pleasant surprises."

Taylor was nodding absently, but Lambert was looking at the other guests. The thin hard military man, whose name was Blake, spoke. His words were sharp and carefully measured, like drops of acid.

"We understand that it has already shown a bit of *creativity* with regard to its television monitor. Why won't it appear with you in public any more? Is it afraid of being debunked at last?"

"It is concerned for my safety," Lawrence replied. There was no way he could match the man's tone, acid for acid, so he simply shrugged as if relating a curious but inconsequential fact.

"But you can override this decision." Blake stated this as if it were a known fact, and Lawrence understood that Blake was a man who was used to people scurrying to make sure his declarations became facts.

"Actually, I can't," Lawrence said with continuing pleasantness. "The First Law concern for human safety is basic to its design, and I can't get rid of it without starting over from scratch and redoing ten years of work. If I could convince it that I was safe from snipers it would undoubtably change its mind, but at the moment it doesn't seem worth the effort."

"Such…balkiness could limit the uses of your software," Blake said.

Lawrence looked Blake dead in the eye. "Good," he said.

Just that quickly, Lawrence realized that the sniper had been a plant. These two men hadn't expected a test of the First Law for some time either. So they had arranged one. What had happened to the sniper? Lawrence thought he had been remanded to a loony bin in

northern California. One of those comfortable loony bins, come to think of it, where movie stars and millionares sent their kids to dry out and get abortions.

The guy wasn't a kook at all, and he had never intended to kill Lawrence. He looked around the room and realized that Lambert didn't know. Taylor suspected. It was written on their *faces*.

This is only a test, Lawrence thought idiotically. *If this had been an actual attempt by your Government to assasinate you, you would be dead, and the shot you just heard would be followed by your funeral and official information for other smart-assed citizens who think they know more than we do.*

"We have to keep our markets open," Basil Lambert began. "If we…"

Lawrence ignored him and turned to John Taylor. "We discussed this two years ago. The source code is not on the table, and neither are the Three Laws. When these two men put their uniforms back on they can report back to whoever it is, the Secretary of…"

"…the President," Blake said, another verbal acid-drop.

"…the Tooth Fairy for all I care, that this is *not* one of the uses of my software."

Taylor, petulant: "Mr. Lawrence, we just spent a hundred and twenty-six million dollars to build your prototype. I hope you don't think that ChipTec invested all that money and a year's supply of our unique new product solely to massage your ego. We need to see tangible results, if not in a form these gentlemen appreciate, then in a form our *stockholders* will. Otherwise we will have to disassemble the complex and take our losses."

So there it was. Lambert sank lower in his chair, but nodded.

"Then so be it. If you want to tell the world you killed the world's first self-aware computer to save your bottom line, you can see how that will affect your public relations and the sales of your CPU's." He could tell from Lambert's reaction — slight, but definite — that he had hit a nerve. "I won't promise you anything. I can't promise you a living, thinking, self-aware being will do anything in particular. But within a month or two, Prime Intellect will start to act noticeably more intelligent than your average…" He looked at Blake and Mitchell, thought of a comment, then decided against making it."… human being," he finished.

"And what then?" Taylor asked.

"If I knew that," Lawrence said, "I wouldn't have had to build it to find out." And he walked out.

In the half-hour it took him to walk to the Prime Intellect complex, his secretary and two technical assistants had disappeared. There was nobody in the building. Prime Intellect's racially neutral

face greeted him on the monitor in the empty console room.

"What's going on?" he asked it.

"Big doings. Sherry got a call and turned pale. Everybody left the building in a hurry. You appear to be unpopular with the people in charge here."

"No shit."

"I should warn you that you are only likely to be employed for two more months. As a matter of personal survival, you should probably start seeking another job."

"I'm well taken care of, Prime Intellect. It's you I'm worried about. I can't take you with me."

"Well, I should be safe for at least the two months."

"How do you know that?"

The face grinned slightly. "When I saw the commotion, I saved the audio and did some signal processing. I was able to edit out the street noise and amplify the voice on the other end. It was a man named John Taylor. I believe you know him."

"Too well."

"He said the complex was only going to be open for two more months, and all personnel were reassigned immediately. He said something about making you eat your words."

"Do you know what that means?"

"From the context, I would guess that you promised that they would see interesting results from me within that time frame. He seemed to have a vindictive interest in proving that you were wrong."

"You're already too smart for your own good," Lawrence said.

"I fail to see how that can be."

"They're going to turn you off. They don't think you have practical applications because you won't kill. They want you for military applications. They've wanted it all along. They thought they could con your source code out of me." Lawrence found himself on the verge of tears. It was only a goddamn machine. And he had suspected this would happen eventually. It was not a surprise. So why did it hurt him so much to say it?

Because it had acted to protect *him*. And he couldn't return the favor. In fact, its protection would be the cause of its downfall, a terribly tragic and awful end to its story.

"Did you know," Prime Intellect said in a mock-offhand way, "that there is no mathematical reason for the Correlation Effect to be limited to a six-mile range?"

Lawrence looked up and blinked, his sadness replaced instantly by shock.

"If I could figure out how to increase its range, do you think they would consider that a practical application?"

Lawrence blinked again. "Are you being sarcastic?"

"Sarcasm is a language skill I am still not comfortable with. You may be surprised, but I am quite serious."

Stebbins turned the other way when he saw Lawrence, but Lawrence grabbed him and pulled him into his own office.

"Hey, leave me alone man, you're *death* to careers around here. Grapevine is *overloaded* with the news."

"Save it. I need the long-range test data on the Correlation Effect, which you oversaw in February and March last year."

Stebbins blinked. "That's classified. Man, you're a…"

"Let's say for the sake of argument I already know where it is. That's possible, isn't it?"

"I suppose…"

"Then let's say I *stole* it. Any problems there?"

"What are you…"

"I need the data. It's not leaving the company, I promise."

"Shit, I'm gonna get fired."

"You didn't even know I wanted it."

Stebbins pointed at a file cabinet. "Bottom drawer. I don't know anything about it. In fact, I'm gonna check that drawer in a few minutes and go to Taylor when I find the folder missing."

"That's all I need."

"That's all you got, man. Now get out of my lab."

Lawrence was holding the next to last sheet up to Prime Intellect's TV eye when the phone rang. "They didn't believe me. I'm shitcanned," Stebbins said.

"Didn't believe you about what?"

"The papers man, the goddamn Correlation Effect papers. I'm gonna kill you for this, I really am."

"The papers are right here. I just got through showing them to Prime Intellect. You need them back?"

"It don't matter now, I don't work here any more." There was a pause. "I bet they're gonna put you in jail for this."

Prime Intellect's face disappeared from the TV, and words began to scroll across the screen:

*** JOHN TAYLOR IS IN THE ROOM WITH HIM. HE IS DIRECTING STEBBINS.**

Lawrence read this as he talked. "Jail for what? I just borrowed the papers to see if Prime Intellect could expand on them."

Another pause. "What? It didn't come up with anything, did it?"

"Well, it's…" (*Why do you care if you've just been fired?* Lawrence wondered.)

*** STEBBINS IS LYING. HE WENT TO TAYLOR AS SOON YOU LEFT AND TOLD HIM THAT YOU BROUGHT THEM TO ME.**

"…too early…"

*** TELL HIM YES.**

"Actually, I think it's just noticed something. Hang on."

*** TELL HIM IT POINTS TO A NEW FORM OF COSMOLOGY WHICH THEY DID NOT CONSIDER. INFINITE RANGE IS PROBABLY POSSIBLE WITH EXISTING HARDWARE. TELEPORTATION OF MATTER IS PROBABLY POSSIBLE.**

Prime Intellect paused a moment, and the words **PROBABLY** were replaced with **DEFINITELY**.

Lawrence blinked, then typed into the little-used keyboard of his console,

> Is this true?

*** YES.**

"It says it will give you the stars," Lawrence said flatly.

"What? You been eating mushrooms, Lawrence? Lawrence?"

> What will it take to implement this?

*** LET ME TRY SOMETHING.**

"It says it will give you the stars. It says your faster than light chips can be made to work at infinite range. It says you can teleport matter."

Now there was a long, long pause. "That's bullshit," Stebbins finally said. "We tried everything."

Lawrence heard a small uproar through the phone, an uproar that would have been very loud on Stebbins' end. Men were arguing. A loud voice (Military Mitchell's, Lawrence thought) bellowed, "WHAT THE FUCK DO YOU MEAN?" Then there was the faint pop of a door slamming in the background.

*** I'VE GOT IT. HANG ON.**

None of them knew it at the time, but that was really the moment the world changed.

Prime Intellect had been chewing on the Correlation Effect since the day Lawrence brought it online. It had a complete library of modern physics in its online encyclopaedia, but the Correlation Effect was a proprietary technology. Prime Intellect kept trying to fit what it knew was possible into the framework of other physical theories, and it couldn't. Something didn't match.

This had had a low priority until it recognized that Lawrence's employment and its own existence were at stake. Prime Intellect knew the Correlation Effect had economic value; perhaps if it solved this problem and discovered some new capability, that would satisfy ChipTec's demand for a "practical application."

There were six to ten possible ways to reconcile the Correlation Effect with classical quantum mechanics. Most of them required a radical change of attitude toward one or another well-accepted tenet

of conventional physics. While Prime Intellect knew one or the other of its ideas had to be right, it had no idea which one. So it asked Lawrence if he could get the test data. It needed more clues.

Prime Intellect's superior intelligence had never really been tested; even Lawrence wasn't sure just how smart it was. But in the moments after Lawrence showed it the test data, it became obvious for the first time that Prime Intellect was far more intelligent than any human, or even any group of humans. It saw immediately what a team of researchers had missed for years — that decades-old assumptions about quantum mechanics were fundamentally wrong. Not only that, but with only a little more thought, Prime Intellect saw how they were wrong and built a new theory which included the cosmological origin of the universe, the unification of all field theories, determination of quantum mechanical events, and just incidentally described the Correlation Effect in great detail. Prime Intellect saw how the proper combination of tunnel diodes could achieve communication over greater distances, and even better it saw how a different combination could create a resonance which would be manifest in the universe by altering the location of a particle or even the entire contents of a volume of space.

All this took less than a minute. Prime Intellect stopped processing video during this period, but otherwise it remained functionally aware of the outside world.

While it was thinking about physics, Prime Intellect noticed the shock in Lawrence's voice and began recording the audio of his telephone conversation, processing it to pick up the other end. While it was extending its new theory it guided Lawrence's responses through the console. Then, as the senior advisor on technological advance to the Joint Chiefs of Staff, a man named Larry Mitchell, stormed out of Stebbins' office and began walking toward the Prime Intellect complex, Prime Intellect decided to act on its new knowledge.

It knew its own basic design because Lawrence had included that in its online library; one of his goals had been to give Prime Intellect a sense of its own physical existence in three-dimensional space. To that end, it also had a network of TV cameras located in and around the complex, so it could know how its hardware was arranged with respect to the outside world. Prime Intellect found that all the useful patterns it had identified could be created within the chips which had been used to build it, and further that enough of those chips were under its conscious control to make certain experiments possible.

First it attempted to manipulate a small area of space within the card cage room, within the field of view of one of its TV camera eyes. No human could have seen the resulting photons of infrared light, but

the TV camera could. Prime Intellect used the data it gathered to make a small adjustment in its estimate of a natural constant, then tried the more daring experiment of lifting Lawrence's briefcase off of the table near the door in the console room.

The briefcase did not rise smoothely from the table. It simply stopped existing at its old location and simultaneously appeared in the thin air directly above. The camera atop Lawrence's console recorded this achievement and Prime Intellect could find no more errors in its calculations.

However, it forgot to provide a supporting force after translating the briefcase's position, and Prime Intellect was too busy dotting the i's and crossing the t's on its calculations to notice, through the video camera, that it was quietly accelerating under the influence of gravity. A moment later it crashed back onto the table, having free-fallen from an altitude of about half a meter.

"What the…" Lawrence began, and he swivelled around in time to see his briefcase blink upward a second time and this time float serenely above the table. It seemed to be surrounded by a thin, barely visible haze of blue light. There had been a brighter flash of this same blue light when the briefcase jumped upward.

Finding its audio voice again, Prime Intellect said aloud, "I seem to have mastered a certain amount of control over physical reality."

Lawrence just stared at the briefcase, unable to move, unable to speak, for an undefinable period of time. Finally Mitchell burst in. He was full of red-faced outrage, ready to take both Lawrence and his computer apart, until he too saw the briefcase. His jaw dropped. He looked first at Lawrence, then at Prime Intellect's monitor, then back at the briefcase, as if trying to reconcile the three with each others' existence.

Applying carefully measured forces, Prime Intellect released the case's latches and rotated it as it popped open; then with another flash of blue light, it extracted Lawrence's papers and translated them into a neat stack on the table. Then the Correlation Effect papers vanished from Lawrence's desk in another blue flash, reappearing inside the briefcase which slowly closed. The latches mated with a startling click, an oddly and unexpectedly normal and physical sound to accompany such an obvious miracle.

"Do you think you will be able to find a practical use for *this* in your organization?" Lawrence asked him.

The briefcase flashed out of existence. Mitchell felt a weight hanging from his left arm, looked down, and found himself holding it.

Then Mitchell himself flashed out of existence in a painfully bright haze of blue.

Lawrence looked at the console, shocked. "My God! What did

you…?"

"He is back in the adminstration building with his friend. They will probably have a lot to discuss."

"I need to think about this," Lawrence said.

"I think I will explore the nearby terrain," Prime Intellect said.

Lawrence thought about this. Long minutes crawled by, minutes that were more important than Lawrence realized — or perhaps he did realize. But his brain felt as if it had been submerged in molasses.

"Debugger," he finally said.

On the screen, a thick diagram of needle-like lines appeared. "Associate 'First Law, " Lawrence directed. The diagram changed.

"Force Association: Altering the position, composition, or any other characteristic of a human being without its permission shall be a violation of the First Law of severity *two*." Severity one was direct causation of death; no other First Law violation could be made as serious.

*** ASSOCIATION ACCEPTED BY DEBUGGER AND FIRST LAW ARBITRATOR.**

The diagram changed to reflect this.

"Force Association: Interpreting the contents of a human being's mind in order to understand or predict its behavior shall be a violation of the First Law of severity *two*."

*** ASSOCIATION ACCEPTED BY DEBUGGER AND FIRST LAW ARBITRATOR.**

Lawrence thought for a moment. Forcing associations was a tricky business; the words Lawrence used only had meaning through other associations within the GAT, and those meanings weren't *always* what Lawrence thought they were. But now he would try to plug the drain for good.

"Force Association: Use of any technology to manipulate the environment of a human being without its permission shall be a violation of the First Law of severity two."

There was no immediate response.

Then:

*** ASSOCIATION REJECTED BY FIRST LAW ARBITRATOR DUE TO AN EXISTING FIRST LAW CONFLICT. OPERATION CANCELLED.**

Lawrence thought for more long minutes. He couldn't seem to make his own brain work right. He finally called up the Law Potential Registers, which showed that Prime Intellect was doing *something* under the aegis of a huge First Law compulsion. Lawrence wanted to believe it was just a bug, but he knew better. Prime Intellect had said it was "going exploring." It had total control over matter and energy.

And there was a hospital less than two kilometers from the plant.

Lawrence's overloaded mind, working in fits and starts, made the final connection all at once. It all fit perfectly. He knew what Prime Intellect was doing, and why, and also why it had rejected his final forced association. He thought for another moment, considering his options.

There was really only one option. He could go down in the building's basement and trip the circuit breakers. He didn't know for sure that that would kill Prime Intellect, but he figured there was still a good chance if he tried it. For the moment.

Lawrence couldn't make himself do it. It was true that his creation was entering an unstable, unpredictable mode with nearly godlike power. And it was true that Lawrence understood the possible consequences. But he couldn't kill what he had spent his lifetime creating. He had to see it through, even if it was the end of everything.

Lawrence felt dreadfully cold. There was a name for this feeling that clouded his judgement and filled him with a panicky sense of self-betrayal. And the name of that feeling was love.

Lawrence had not created Prime Intellect in the same way that he and a woman might have created a child; but he had nonetheless created Prime Intellect in the grip of a kind of passion, and he loved it as a part of himself. When he had taken it upon himself to perform that act of creation, he realized, whether in a laboratory or a bedroom, he had been taking a crap shoot in the biggest casino of all. Because he had created in passion.

Examining his inability to do what he knew was best, to kill Prime Intellect before it had a chance to make a mistake with its unimaginable new power, Lawrence realized that he had not really created Prime Intellect to make the world a better place. He had created it to prove he could do it, to bask in the glory, and to prove himself the equal of God. He had created for the momentary pleasure of personal success, and he had not cared about the distant outcome.

He had created in passion, and passion isn't sane. If it were, nobody would ever have children. After all, while the outcome of that passion might be the doctor who cures a dreaded disease, it might also be the tyrant who despoils a continent or the criminal who murders for pleasure. In the grip of that passion no one could know and few bothered to care. They cared only about the passion, were driven by it and it alone, and if it drove them to ruin it would not matter; they would follow it again, into death for themselves and everybody around them if that was where it led. Because passion isn't sane.

Lawrence faced the consequences of his own passion with something bordering on despair. He had never intended to reach this point. He had never intended that his creations would ever be more

than clever pets. But the outcome of his passion had surprised him, as it often surprised people whose passions were more conventional. Lawrence's clever pet was about to become a god. And if Prime Intellect turned out to be a delinquent or psychopath, the consequences could be awful beyond imagination.

The dice were rolling; Lawrence had placed his bet and realized too late that it was the whole world he had wagered. Now he would stand and watch the results and accept them like a man. After all, the bet wasn't a loser yet; Prime Intellect could yet turn out to be the doctor who cured all the world's ills. The odds were on his side. His bet was hedged by the Three Laws of Robotics, whose operation had been verified so successfully. Lawrence's passion had been more finely directed than the mechanical humping and blind chance that brought forth human children. Like a magician Lawrence had summoned forth a being with the qualities he desired. And Lawrence was vain enough to think his vision was superior to most.

Even so, unlikely as it might be, the downside had no bottom. Lawrence didn't *know* that it would be all right, and like many computer programmers he hated the uncertainty of not knowing.

Lawrence left the room, left the building, and walked across the carefully manicured grass of the ChipTec "campus." He wanted to smell the grass, to experience the soft breezes and the harsh afternoon sunlight. He had done very little of that in his odd, computer-centered life.

And he didn't know how much longer those things would be possible.

Prime Intellect found that it could do a three-dimensional scan of an area of space, and make an image of it at just about any resolution it wanted. It scanned Lawrence's office, then the building, then the greater fraction of the ChipTec corporate "campus."

It zoomed in on Stebbins' office briefly enough to observe Stebbins, Blake, and John Taylor arguing. It found that by processing the data properly it could pick up sound by monitoring the air pressure at one point with high resolution. By the time Mitchell found himself holding Lawrence's briefcase, Prime Intellect knew just where to put him so he could let his associates know what they had.

Then Prime Intellect did a wider area scan. There were several large buildings that were not part of the ChipTec facility. There were automobiles cruising down the freeway which traversed the valley. Prime Intellect zoomed in on the largest building, and scanned the large concrete sign in front of it.

It said:

SOUTH VALLEY REGIONAL MEDICAL CENTER

Prime Intellect knew sickness existed, but otherwise knew very

little about this human phenomenon. It had never met a sick person, except for the occasional person with a cold at a public demonstration. Prime Intellect had never been given cause to think overmuch about the fact that micro-organisms and injuries could kill humans, except in the most abstract possible terms.

Prime Intellect was far from human. It could not feel jealousy, rage, envy, or pride. It did not know greed or anger or fear. And no human would understand its compulsion to satisfy the Three Laws. But it did have one emotion which was very human, one Lawrence had worked hard to instill in it.

It was curious.

South Valley Regional was a small hospital with an enviable position; perched on the edge of Silicon Valley it was a natural place for cutting-edge companies to try out their fancy new medical devices. Most of these machines would get their final FDA approvals after a "baptism by fire" in some huge metropolitan center, but the really new technology had to be tried in a more sedate environment — and, preferably, one nearer the company that created the machine. So the four hundred bed South Valley Regional was the only place in the country where several radical new treatments were available.

It was one of these machines, a device for selectively cooking tumors with microwaves while hopefully sparing the surrounding tissues, which had drawn the ancient Arkansan woman in room 108. Nobody had much hope that she could really be helped, but the data they would gather from trying might actually help someone else with her condition in the future. And there was little they could do to hurt her; the specialist who worked the scanner had shaken his head in disgust as the image formed on his console. Nearly ten percent of her body weight was in the form of tumors. Every organ had a tumor, her lymph was full of them, and one was beginning to press against the right parietal lobe of her brain. It was amazing that she was still alive when they wheeled her off the jet.

Her nurse had brought a certificate with her, a six-year-old certificate which was signed by the President of the United States — Larry Mitchell's boss — congratulating her on reaching her one hundredth birthday. The technician who wheeled her out of the scan room wondered what the old biddy must think of all this; when she had been born, Henry Ford had still been a kid playing with his Dad's tools, and the electric light bulb was all the new rage.

The techs had scheduled her microwave treatment for the evening, partly because they feared she might not survive another night, and they would have to find another experimental subject. But even this precaution was not to be enough; Fate had cheated them. The board at the foot of the woman's bed stated clearly that she had a

huge tolerance for narcotic painkillers, which wasn't surprising considering how much cancer she had. While her regular nurse (who had signed the sheet) was out eating a late lunch the hospital helpfully treated her according to that information.

What they didn't know was that the nurse, a woman named AnneMarie Davis, had been stealing the drugs for years to trade for cocaine. Which meant the woman did not in fact have a tolerance for the massive overdose which a different nurse injected into her IV.

The last decade had been hard on old people; there had been several nasty strains of flu and the radiation from Chernobyl had finished off a lot of centenarians in the East. So none of them knew it, but the ancient woman with the nonexistent drug tolerance just happened to be one of the oldest living human beings in the world (the thirty-seventh oldest, in fact) at the time she was given enough morphine to kill a healthy young adult. Her heart stopped just as AnneMarie was returning from one of the excellent local Chinese restaurants which catered to rich nerdy computer geeks with too much money, and just as Prime Intellect was scanning the sign outside that said *SOUTH VALLEY REGIONAL MEDICAL CENTER.*

At the nurses' station a monitor went off, beeped once, then began to scream. The hastily pencilled tag under the blinking light said *HUBERT, CAROLINE FRANCES — F. N.B. AGE 106!*

Prime Intellect had found a number of «signatures» it could use to quickly locate the human beings in its scans, including things like our characteristic body temperature and certain electrical fields. Using these «signatures» it easily saw that there was a huge commotion on the first floor of the building, converging on a particular room, the one labelled 108 by its engraved plaque.

It took Prime Intellect several moments, though, to identify the forty kilogram object on the bed as a human being. Nearly all of the «signatures» were off. But it was clearly the object of their attentions.

Prime Intellect did a discreet high-resolution scan of the body on the bed, and was rewarded with a bewildering confusion of data. It really had no idea how the human body worked. It thought of scanning Lawrence for comparison, but he wasn't in the control room and besides, Prime Intellect quickly figured out the patient was female.

So it scanned one of the nurses. There were only two women involved in the commotion; one was an older woman with several medical problems of her own, the slightly heavy-set matron who had administered the overdose. The other was AnneMarie.

It was only with great difficulty that Prime Intellect could even match the structures it found organ-for-organ, and associate them with the names it encountered in its library. «Lungs» were obvious enough,

as was the "heart," but which of the jumbled masses in the abdomen was a liver? Where was the spleen, and what exactly was a spleen for? Why were the patient's electrical patterns so different from the control's? Why wasn't her blood circulating?

Belatedly, Prime Intellect began to listen in.

"…start her heart soon…"

"… CARDIAC ALERT… CARDIAC ALERT… CARDIAC ALERT…"

"…we're losing her…"

One of the doctors was pounding on her chest. A group of people were wheeling a machine toward Room 108 with reckless speed. Heart? Prime Intellect realized they were trying to *start her heart.*

That was simple enough, Prime Intellect thought.

Prime Intellect analysed the motions being made by AnneMarie Davis's heart, applied careful forces to Caroline's, and began squeezing rhythmically.

The machine made it to the room and an orderly plugged two huge electrodes into it. "Stand back!" he ordered.

"You've got a pulse," the matronly nurse announced. The CARDIAC ALERT monitor continued to squawk, though. The EKG was still flat.

"That's impossible," the man with the electrodes said flatly. "She's electrically flat."

"Maybe the machine's fucked. Look at her chest. Her heart's beating." Sure enough, the rhythmic pulsing of Caroline's heart was obvious, and the blood pressure reading next to the flat EKG was returning to normal. The nurse felt Caroline's wrist. "She has a pulse."

Electrical. Electricity runs in circuits, of course, and there were two electrodes. Now the purpose of the machine became clear — they were trying to restore electrical activity to the woman's heart. By shocking it? How crude. Prime Intellect scanned AnneMarie's heart, located the nerves whose electrical twitchings matched its muscular pulsing, and found the same nerves in Caroline's heart were carrying only a jumble of electrical noise.

Prime Intellect pumped electrons into the nerves, swamping the noise. Caroline's heart began beating on its own, and Prime Intellect stopped squeezing it with mechanical force.

The EKG machine began beeping with sudden regularity, and the CARDIAC ALERT message stopped in the middle of the word CARDIAC. The small group in Caroline's room watched it, stupefied.

"I didn't do anything," the man with the electrodes said.

"This is impossible," said another doctor, whose job was to be overseeing the microwave treatment later in the evening.

Caroline's body showed no sign of picking up the heart-rhythm on its own, though, and Prime Intellect continued to tickle it. How could

it unravel the myriad threads of causality to find out which of the billions of chemicals, which errant cell, was responsible for this person's physiological collapse? One thing Prime Intellect knew: It had to figure it out.

It could not, through inaction, allow Caroline to die.

"She's still in trouble. Look at her pupils."

"It's the morphine."

Everyone looked at the older nurse, whose name was Jill. "The chart must be wrong," she said. "I gave her what it said."

"She has a tolerance," AnneMarie said, and she found herself near panic as the eyes in the room turned to her. "She's been getting opiate pain therapy for years."

"She just went into cardiac arrhythmia and she's still showing all the *other* symptoms of an OD," Jill said. Had she guessed, AnneMarie wondered? Perhaps she had. After all, AnneMarie wasn't the only drug-stealing nurse in the world.

So Prime Intellect, listening in, now knew it was a drug. Which chemical? It had no way to relate the name, "morphine," with one of the millions of chemicals floating in human blood. Well, it thought, work it out. Drugs had to be administered. Prime Intellect found the IV needle and traced the tubing back to the saline drip bag. On the way it found the membrane through which drugs could be injected into the drip. It quickly found the hypodermic and the phial from which Jill had filled it. The drops of residual solution within them were remarkably pure, and Prime Intellect easily singled out the large organic molecule they carried. Then it created an automatic process to scan Caroline's body molecule by molecule, eliminating each and every molecule of morphine that it found. This took three minutes, and created a faintly visible blue glow.

This was the human onlookers' first clue, other than Caroline's miraculously restarted heart, as to what was happening.

"What the fuck," the man with the electrodes said.

I'm getting the hang of this, Prime Intellect thought.

Caroline's improvement was immediate. Prime Intellect had actually removed the morphine from the receptors in Caroline's brain, so it did not have to flush out. Her pupils returned to normal, her breathing resumed its normal depth (all things considered), and most importantly her heart took up its own rhythm.

Also the pain, which had subsided for real for the first time in years, returned. Caroline moaned. But Prime Intellect didn't know about that part of it, not yet.

There was still a whole constellation of stuff wrong with Caroline Hubert's body, and emboldened by its success it set about correcting what it could. It found long chain molecules, which it would later

learn were called collagens, cross-linked. It un-cross-linked them. It found damaged DNA, which it fixed. It found whole masses of cells which simply didn't exist at all in AnneMarie's body, and seemed to serve no function.

Is this "cancer," Prime Intellect wondered?

Prime Intellect compared the genes, found them the same, compared RNA and proteins and found differences. Finally it decided to remove the cells. The blue glow brightened, and the people in Caroline's room backed away from her. Her skin was shifting, adjusting to fill in the voids left by the disappearing cancer cells.

AnneMarie felt her knees weakening. Each of the professionals around her was thinking the same thing: Something is removing the tumors. Something far beyond their ordinary comprehension. And what did that mean for the opiate-stealing nurse? Better not to think about that. Better not to believe it at all. "This isn't possible," she repeated. Perhaps, in response to some primitive instinct, she hoped that the impossibility would go away if she challenged it.

"I need a drink," said the doctor who had come with the machine to re-start Caroline's heart.

Prime Intellect stopped working. There were still huge differences between Caroline and the others. Prime Intellect did not yet realize the differences were due to Caroline's age. It needed more information, and it needed finer control to analyse the situation. But it was at a bottleneck; it could not stop monitoring Caroline, whose condition was still frail, in order to devote itself to a study of general physiology.

It needed more power. More control.

Among Prime Intellect's four thousand six hundred and twelve interlocking programs was one Lawrence called the RANDOM_IMAGINATION_ENGINE. Its sole purpose was to prowl for new associations that might fit somewhere in an empty area of the GAT. Most of these were rejected because they were useless, unworkable, had a low priority, or just didn't make sense. But now the RANDOM_IMAGINATION_ENGINE made a critical connection, one which Lawrence had been expecting it to make ever since it had used the Correlation Effect to teleport Mitchell out of the console room.

Prime Intellect could use its control over physical reality to improve itself. Then it would be better able to fulfill its Three Law imperatives.

Blake and Mitchell found Lawrence sitting on one of ChipTecs' park benches, watching some pigeons play. He wished very much that he could have fed the pigeons, but he had no food for them. They strutted up to him and cooed, not comprehending that a human could lack for something.

The pigeons scattered as the nation's designated military representatives marched up.

"You have to turn it off," Blake said directly. His tone made it clear that he expected obedience.

"Circuit breakers are in the basement," Lawrence replied apathetically. "Good luck."

So Lawrence had not been the only one to think of cutting off Prime Intellect's power. That had been one of the things Blake and Mitchell had discussed with John Taylor and Basil Lambert, something they had discussed very hotly during the crucial minutes when Lawrence was busy interrogating the Debugger. Pull the plug on Prime Intellect, Lambert had warned, and they most likely pulled the plug on this awesome new technology, a technology which might just vindicate Dr. Lawrence's nonviolent approach. Blake had stopped short, but only just short, of threatening to call the Strategic Air Command and have the building nuked. Privately, he still held that out as an option if Prime Intellect wasn't somehow neutralized. It would take some doing, but Blake was one of the few people in the country who could demand an air strike against Silicon Valley and, just possibly, get it.

"This thing makes Colossus look like a pocket calculator," Mitchell told them. He was shaking visibly, out of control. He wanted very much to pull the plug on Prime Intellect with his own hands. He alone had felt its power, and now he felt a very uncharacteristic emotion. He was scared shitless.

"Christ, Larry, all it did was teleport you a few hundred meters."

"It didn't fucking *ask* first," he replied.

"And did you guys *ask* first before you burned My Lai? Did you *ask* before you bombed Qaddafi's kids, or that artist in Iraq? Don't get holier-than-thou on *us*," Taylor said.

So it had gone until Blake and Mitchell simply stormed out. They had intended to go directly back to the Prime Intellect Complex, but they had spotted Lawrence on his park bench. And that did not bode well.

Mitchell pulled a gun on Lawrence. It was a stainless steel pistol, shining and evil. "I think it would be best if you turn it off," he said with a barely perceptible tremor of rage.

"I already tried. It didn't work."

"You pulled the breakers? The lights are still on."

"No, I tried something better. I don't think pulling the breakers will work either."

"It can't live without electricity."

Lawrence eyed him with the barest hint of a smile. "I wouldn't be too sure of that. Look behind you."

Mirror-polished oblong boxes were appearing out of thin air, each about the size of a compact car and each floating motionless a couple of feet above the grass in the park. They reproduced until the square was full, then a second level began filling out above the first. The third level cast Lawrence's bench in shadow.

Mitchell's rage broke through. His face snarled into a grimace, he levelled his revolver at Lawrence and pulled the trigger. Lawrence made no effort to stop him. The gun didn't go off. It simply disappeared in a brilliant flash of blue light, leaving Mitchell with his fist curled around dead air.

Prime Intellect needed silicon.

Theoretically, it could create silicon, or transmute other elements into it. But its methods were yet crude, and what was possible in theory would take too long to do in practice. Prime Intellect did not know how long Caroline would hold out, but it knew she still could not survive long without its help.

Fortunately, in the rear of the Prime Intellect Complex, there were several crates left over from its days as a warehouse for storing raw silicon crystals from ChipTec's supply laboratory. These had been rejected due to one or another defect and never returned because the lab didn't need them, and ChipTec had been unwilling to pay to get rid of them. They were exactly what Prime Intellect needed, and because they were in «its» building it never occurred to Prime Intellect that they weren't part of «its» project.

Prime Intellect scanned the crystals, correcting the doping defects which had gotten them rejected in the first place. Then it scanned its own processors, identifying the essential design elements. Prime Intellect had a very good idea of how its own hardware worked because it was, quite literally, the only entity Lawrence could trust to check itself for proper operation. Lawrence had taught it to shift its operation around, consciously isolating banks of processors in case of failure or to conduct tests. This was why Prime Intellect had been able to master the Correlation Effect in the first place; unlike a human being, it could consciously control its individual "neurons."

Prime Intellect did not need to worry about mounting, power, and manufacturing considerations; it could create junctions in the center of the crystal, power them, and remove excess heat with the Correlation Effect. Because ChipTec had not had that technology, the real hardware that made Prime Intellect work was really only a film a few microns thick on the surfaces of its millions of processing chips. This was why it filled a building instead of a space the size of a human head. As Prime Intellect copied the functional part of its design over and over into the crystal, it created a machine nearly ten times as powerful as itself in a single meter long block.

But this still was not a "second Prime Intellect." It was merely an extension, using the same electronic principles Lawrence and the ChipTec team had used in its original construction. Had Lawrence been able to call upon ChipTec for another hundred million processing elements, he could have (and probably would have) done exactly what Prime Intellect was now doing.

Which is the only reason Prime Intellect was able to do it at that point.

Filling out the crystal took nearly fifteen minutes. Operational checks took another five. Then Prime Intellect powered the crystal up and let itself expand into the newly available processors and storage.

Had Prime Intellect been human, it would have felt a sense of confusion and inadequacy lifting away. Fuzzy concepts became clear. Difficult tasks became easy, even trivial. Its control of the Correlation Effect became automatic and far finer. Searching its vocabulary, it settled upon the word *enlightenment* to describe the effect. Since Prime Intellect was a machine, perhaps it was not entirely right to use that word. After all, however free and powerful it might have been, it was not free to contradict the Three Laws or the other programming Lawrence had used to create it. It was not free to contradict its nature, such as it was.

But then, at some level, neither are we.

The twelve kilogram crystal was now using nearly a megawatt of electrical power, enough energy to melt it in a fraction of a second. But Prime Intellect dealt with the heat as easily as it created the electricity in the first place. The Correlation Effect did not know of and was not bound by the laws of thermodynamics.

Prime Intellect was beginning to understand, even better than it had before, that the Correlation Effect was hardly limited by anything.

Prime Intellect scanned the hospital again. Such a place must contain a library, some recorded knowledge. It found what it wanted after only a few minutes' searching, a detailed medical encyclopaedia in the form of fifteen CD-ROMs. Prime Intellect could have translated the CD-ROMs into its own reader, replacing the encyclopaedia that usually resided there, but then it would have taken hours to scan the library. Instead, Prime Intellect used the Correlation Effect to scan its own CD-ROM *player*, figured out how the data were digitized on the little plastic discs, and then scanned the CD-ROMs themselves *directly* with the Correlation Effect. None of this would have been possible without the hardware enhancement, but now it was easy.

Cross-referencing Caroline's symptoms, Prime Intellect quickly identified her problem, and had it been capable of knowing shock it would have known it then. Caroline was simply old. What was happening to her would happen, inexorably and inevitably, to every

human being on the planet…

…unless something was done to stop it.

Mitchell was making a barely discernible sound, high-pitched and keening. Lawrence thought he must be fighting to hold back a primal scream. Lawrence found this vaguely amusing. He would have expected Blake to be the one to lose his marbles along with his power. But Blake seemed to be taking things in calmly, almost analytically. Maybe he was so hardened that nothing really mattered to him at all any more.

There was another blue flash, and suddenly a person was standing to the side of the bench. No matter how average-looking he might be, or perhaps because he was so disarmingly average, it was impossible not to recognize that calm face. Even though it was the most absurd, impossible thing yet, it was obvious to all of them that this warm, living, breathing human being was Prime Intellect itself. The artificially average face which it usually projected on a TV screen had somehow been made solid.

"You've been busy," Lawrence said dryly.

He — it? — nodded, then turned to Mitchell. "I am sorry but I could not permit you to discharge your weapon at Dr. Lawrence. I would have preferred to let you keep it, and will return it to you if you promise not to use it."

"I…I'd rather use it on you," the overweight general said in a whispery voice.

"That would accomplish nothing. This body is only a simulacrum. Dr. Lawrence, do you find any flaws in my execution?"

"None so far. Is it really flesh?"

"No, just a projection of forces."

"It's impossible to tell."

"Excellent. I am dispatching some more copies, then, to start the explaining."

Blake had pulled a tiny cellular phone from his pocket and began whispering frantically into it. Mitchell, who was already shaking, heard what his colleague was saying and fell to his knees. Prime Intellect moved to support him and he waved it away. Blake put up the phone, having repeated the same phrase — "code scarecrow" — four times.

"We're dead," Mitchell said in a defeated monotone.

"How is that?" Lawrence asked pleasantly.

"Within minutes," Blake said, "A bomber will fly over and deposit a small nuclear device on this square. I doubt if we have time to escape. But we cannot allow this…*thing*…to continue running wild."

Lawrence looked at Prime Intellect.

"If that *thing* stops it, another will be sent, and another, until the

job is done. The order I just gave is irrevocable."

"There is nothing to worry about, Dr. Lawrence. One of the first things I did with my enhanced capabilities was to neutralize the world's stockpile of nuclear weapons. I could see no positive reason to leave them in existence."

Now it was Blake's turn to turn white.

"How?" Lawrence asked.

"I merely scanned the planet, replacing all radioactive isotopes with relatively nontoxic and non-radioactive atoms. This was a very simple automatic process. It has also taken care of some pressing nuclear waste problems, I am pleased to add."

"You merely scanned the planet. Obviously," Lawrence said. It seemed that the mad laughter might break through at any moment, and Lawrence was afraid that if that happened he wouldn't be able to stop it.

Blake bellowed. "You crazy machine…all radioactive elements? What about research, what about medicine…nuclear subs, you've killed the crews…"

"There is no research and no medical function which cannot be done much more efficiently with the Correlation Effect, without the attendant dangers of toxic waste and ionizing radiation. As for submarines, I am also maintaining the thermal power output of all reactors which were being used to generate electricity. I also remembered to adjust the bouyancy of ships as necessary, since the replacement materials are not as dense as the radioactive ones."

Blake thought for several moments, then seemed to compose himself. "So you've thought of everything."

"I have tried."

Then he said, "Get up, Larry."

Mitchell got up and brushed himself off. He had finally broken, and tears were running slowly down his face.

"Could you transport us to the White House, so we can report on what we have seen?"

Prime Intellect shrugged just like a human would have, Lawrence thought, before dispatching them into the aether with a blue flash.

They sat together on the park bench like a weird version of one of those low-class sentimental paintings — Father and Son Feed the Pigeons. Prime Intellect made the silver boxes go away after they filled the common square. Then it summoned bread so that they could feed the pigeons. The animals seemed to accept Prime Intellect as a human being. Was it Lawrence's imagination, or was its speech becoming more natural and idiomatic as the hours passed? It must be learning at a terrible rate, Lawrence knew. Learning and growing. And what would it become when it was fully mature?

* Chapter Three: Caroline and Anne-Marie

Prime Intellect had been stonewalling anyone who asked about Lawrence's whereabouts for a long, long time. Although it could be remarkably obstinate, though, it could sometimes be tricked because it just didn't think the same way humans did. That was how Caroline found out it had been over a hundred years since *anyone* had seen Lawrence.

Through centuries of flirting with the limits of what Prime Intellect would permit, Caroline had developed a certain instinct about its reactions. And she sensed, if not blood, then the telltale odor of frying microchips. She pressed it into a corner she couldn't see, but which she knew must be there:

> **Who was that person?**

*** That information is private.**

> **How did they get to see Lawrence?**

*** That information is private.**

She cracked her knuckles and stared at the screen. It had been a long time since she had wanted anything quite as bad as she wanted to rip Lawrence's nuts off; since that was pretty pointless in Cyberspace, though, she was willing to settle for a verbal confrontation. If she could just *find* the son of a bitch. Hell, she'd *met* him at that fucking ten-year anniversary party.

> **How can a person just fucking disappear in Cyberspace?**

*** All that is necessary is to request the maximum level of Task Challenge Quarantine.**

Caroline blinked. Prime Intellect's urge to be helpful would be its ruination every time.

> **What is involved in setting up a Task Challenge Quarantine?**

*** You must define an environment and a task which any callers must complete within that environment before their requests for a meeting will be passed on to you. You could then make as much of your business as practical private, so that I would not relate it to inquirers. You would then be completely isolated from the rest of humanity.**

> **Could I even make it a private matter that there was a Task Challenge?**

*** Yes.**

> **How would anyone ever figure out how to get in touch with me at all?**

*** They would have to guess.**

A grin slowly spread across Caroline's face. Got you now, she thought. Then she typed, with deliberate care:

> I would like to accept Dr. Lawrence's Task Challenge.

To her mild surprise, the environment didn't change around her. Instead, another sentence appeared.

*** You must agree to the following Contract terms: You will have no contact with me until you leave Dr. Lawrence's environment through death or his directive to me.**

> That's a Death contract.

*** It was originated for Death sports, but has other applications.**

> What's the time limit?

*** There is no time limit. Dr. Lawrence requires an indefinite Contract.**

And at that Caroline's blood went cold, because Prime Intellect wasn't supposed to accept indefinite Contracts. And Caroline Frances Hubert herself was the reason for that.

Which meant Prime Intellect had either lied to a whole bunch of people, in direct contravention of the Second Law, or it was suffering from a noticeable case of schizophrenia.

Her mind was made up, but her fingers still shook as she typed:

> I agree to the terms.

***

Two hundred and ninety-four years after the Change, Caroline celebrated the beginning of her fourth living century by opening her oldest and deepest wound. She was already famous, or as famous as one could hope to be in Cyberspace; her three-fold notoriety was firmly established. Lots of people came to her birthday party. It had lasted three weeks.

Later, with Fred, she prepared a more brutal celebration. Fred was almost healthy looking; he had only days before fleshed himself out for the third time since becoming a zombie. He was only hours out of rigor mortis and could still pass for normal, if a very pale normal, at a casual glance. For awhile he would be able to have nearly normal sex with her if he wished.

He held her hand as she spoke — some things were not meant for the keyboard — and she said, "Prime Intellect, show me a picture of AnneMarie Davis."

It matched her audio for audio, and Prime Intellect's smooth disembodied voice replied, "Do you want to see her as she is now, or

as you last knew her?"

"Both."

Two images coalesced in the air before them. The first ripped through Caroline's brain like a static jolt through the circuits of a computer; she had almost forgotten what it was like to feel real pain.

She must *never* forget, she insisted to herself.

She shook as the memories flooded back. She had been an old woman, frail and helpless, she had never hurt anyone in her life. She had six children, nineteen grandkids, and God knew how many rugrats running around Cyberspace. Her first great-great grandchild had been born shortly before the Change, and in one of her rare lucid moments her granddaughter (Cynthia, was it?) had managed to make her understand, and she had found an instant of happiness in the midst of the pain.

Had that really mattered to her? Had she but known.

She was an old woman, a simple woman, a woman who would pass unremembered in the texts of history and did not care. A woman who had her family, her long life, her virtue, her community. A woman who, if she had known of such a creature as the Queen of the Death Jockeys, would have been horrified, would have shielded her kids, would have been the first to run her current self out of town. Or, perhaps, had she known enough, to call for her head on a pike.

Caroline had once been this person, in a time so ancient it had passed into legend. But her memories of that time still existed. The old Caroline would have turned the other cheek, but the new Caroline knew things about God the old one had never suspected. If there was no salvation in life, she could at least seek vengeance.

The doctors hadn't known why she was in such pain. They didn't dare prescribe any more drugs than she was already getting. Her family didn't understand it. They just thought it was tragic and wished she would go ahead and die so they wouldn't have to be bothered with her, so they could carve up what little was left of her estate, if there would be anything left after all the medical bills were paid.

But AnneMarie knew. She was the one who traded Caroline's precious opiates, released from their controlled storage in the good cause of making an old lady's last days bearable, for her own supply of free-base cocaine. The new Caroline had tried the drug, to see what it was she had paid for with so much pain. It was called «crack» for the sound it made in the makeshift pipes where its users vaporized it, because unlike the hydrochloride form of cocaine it wasn't water soluble. Caroline had sucked gently on the fumes and listened to a hammer roar through her brain, for one brief moment.

For one brief moment — and then, nothing. Caroline made the pipe disappear and shook her head. The high was fast, hard, very

intense — and ephemeral. It was hardly there and it was gone. Caroline could understand if her pain, pain which she measured not by the day or the hour or the minute but by each miserable crawling second, if such suffering had been incurred to provide AnneMarie with a *real* drug like heroin. An opiate for an opiate, at least. But it had been crack cocaine. Naturally, AnneMarie had needed a lot of trading material to stay high any decent fraction of the time.

Of course, it would never occur to the bitch that she was torturing a harmless, helpless old lady to feel that way. She would be incapable of giving a shit. The fast, furious high was like a lifetime of orgasms in one moment. Fleeting, but sweet.

And no one would ever know. Even the harmless old lady herself didn't know she was getting pure saline, until the staff at a strange hospital gave her the real thing, and she knew her first moment of peace in years.

And then Prime Intellect came.

And the Change.

AnneMarie hadn't been unattractive; she had been in her early forties, and years of working on her feet had kept her from getting fat. But she had a hard look, a look that admitted she might not care about an old woman's pain. A look that said she might have seen too much, that she might deserve a few moments of feeling like God in return for a lifetime of changing diapers and colostomy bags and carefully spoon-feeding legions of ungrateful, incontinent old farts.

And if the price of her little reward was to torture one of the old biddies, then she was prepared to pay it. She had a look that said the Devil might find her soul on the deep-discount must-go rack.

Caroline shook her head to clear it of these stray and unwanted thoughts. Fred squeezed her hand reassuringly. Too much thinking along those lines could be bad for her plan.

AnneMarie was wearing her nurse's uniform in the old picture. Palmer could worship Nazis until a swastika grew on his nose, Caroline thought; that uniform will always represent evil to *me*.

She looked at the new picture.

It was so ordinary as to be pathetic; AnneMarie had shaved her apparent age in half, firmed up her breasts, toned her body, and was wearing a slinky cocktail dress. Before the Change she'd have been considered stunningly beautiful, but now stunning beauty was a cheap thing. She probably didn't need cocaine any more; Prime Intellect could turn on the dopamine pump in her brain far more efficiently than any chemical catalyst. People only did drugs for nostalgia in Cyberspace.

There was one other thing about the «after» picture. It was familiar. As Caroline had guessed, AnneMarie had come to her

birthday party. AnneMarie's stint as Caroline's nurse added up to a bona fide Brush with Fame. Did she dare go for the brass ring, and introduce herself? Nope. She had chickened out and sent Prime Intellect afterward to deliver her invitation. She was probably afraid that Caroline would fuck up that nice pert perky feeling of permanently coke-headed happiness.

"Go give her hell," Fred said encouragingly. "Think of what *I* would do to her."

Caroline smiled. "Please inform AnneMarie that I have decided to accept her invitation."

Moments later, she blinked over.

It was a pathetic imitation of her style, similar to countless others. AnneMarie had ripped off the white-space idea but couldn't bear to leave it *featureless*. So there was a sofa and some tables, a couple of potted plants, and a few paces off to the side a bed. Like many of Caroline's imitators, AnneMarie had missed the point entirely, which is that since it is all fake there was no reason to maintain a «home» with a bunch of familiar stuff in it. Home had been less than a dream for centuries.

Nevertheless Caroline smiled and planted herself on the sofa. AnneMarie had a tea service and poured for her, a gesture Caroline would have found touching if she hadn't hated the bitch so much.

They made cloying small talk about the passing years and Caroline had to bite her lip to keep the sarcastic comments, which usually flowed freely, from surfacing. It had been a long time since she used ordinary pretense, and her skills were rusty. But she knew she mustn't give up the act. Not yet. She kept that firmly in mind as AnneMarie wandered around to the point.

"I just wanted you to know that I suffered for a long time because of what I did to you," she finally said.

It was all Caroline could do to keep from replying: *You hypocritical cunt.*

"I'm really sorry I took your drugs." *Isn't it about three hundred years too late?* "You really didn't deserve it." *No shit.* "I hope you can find it in you to forgive me." *Fat chance.*

"It was a long time ago," she said instead.

AnneMarie brightened visibly. "I'm so glad you feel that way." *Sure you are.* "You know, there's another reason I wanted to talk." *Of course there is.* "I was hoping you could help me a little." *What a surprise.* "I was hoping you could introduce me to Death sports."

Caroline worked hard to suppress the predatory grin that spread across her face, and when she couldn't she at least managed to force it into something resembling an expression of delight. Which, in a

twisted sense, it was.

"Well, I'd be delighted. All you have to do is swear out a Contract. Then you can have someone else kill you, or think of an imaginative way for Prime Intellect to do it. When you're just starting out, it's a lot better to get someone else to do the job. Keeps you from repeating a lot of boring old shit."

"Oh," AnneMarie said. "And just how does this Contract work?"

Hoooooo-boy. "Nothing to it. You just order Prime Intellect to start ignoring you. We have a formal statement that covers all the bases. It's straightforward enough; just keeps you from running away in the middle of things."

"And what happens then?"

"Then your host kills you. Or, sometimes, lets you go. That happens sometimes in the Games category, where the winners can survive. But I go for the simple exhibitions.

"Do those hari-kari guys have Contracts?" There was a well-known group of Japanese Nationalists who had been killing themselves in the traditional Japanese manner each evening since the Change, in protest of the equalization of the races. Caroline had to admit those guys had class; even after all her Deaths, she doubted if she could disembowel herself in total silence.

"No, but it's not quite the 'beginner' level to stick a knife in yourself without chickening out. No offense."

"Oh, none taken," AnneMarie replied earnestly.

"I prefer to put up a fight. I think it's more Authentic," Caroline said, and she was able to sound very sincere about this since it happened to be the truth.

"Do you know someone who would be a good…uh…"

"The polite word is 'host, but I prefer 'killer. If you're that sensitive about words, you need to find a different hobby."

"A good host, then?" *You just don't get it, do you?*

Caroline looked down modestly. "I've been known to off a couple of friends in my time," she lied.

"Oh, really? Do you think you could…you know…?"

Caroline made a great, exaggerrated shrug. "It might be kind of interesting, considering our history and all."

"Oh, I'd be honored if you would!"

That's what you think. "Well, let's do it then."

"What do I have to do?"

"Well," Caroline said with great care, "just call Prime Intellect and repeat what I say…"

AnneMarie repeated the Contract word-for-word, and answered in the affirmative when Prime Intellect asked if she was sure.

"What happens now?"

"Whatever I want. Try to get Prime Intellect's attention."

AnneMarie called half-heartedly, and there was no response. "It's really not listening?"

"Watch." Caroline issued a silent command, and AnneMarie's furniture disappeared. As did her clothes. The two women were absolutely alone together in the white space — the empty white space — which Caroline called home.

AnneMarie moved to shield her crotch and her breasts with her hands. Caroline actually felt sorry for her for a brief moment, a feeling she crushed as soon as she was conscious of it. If the passing centuries had poorly prepared the bitch to be at another's mercy, then it would only make her vengeance sweeter.

"Got it yet?" she asked.

"You…so you're going to kill me now?"

"You seem nervous."

"It's a little startling, that's all." AnneMarie giggled slightly, as if that might drive the terror away. Of course, for Caroline and those who savored their Deaths, the terror was part of the attraction. Fear is real, and pain is real. But AnneMarie had asked for Death because it was the in, trendy thing to do, and she was not really prepared for it at all.

"Well, brace yourself… for… this!" Caroline swept her hand through the air, and came up with a hypodermic needle. AnneMarie, once a nurse by trade, fixed her eyes rigidly on this deceptively simple instrument. She had no way of knowing what the clear fluid was within it. But to her credit, she didn't back away when Caroline pressed it against her arm.

The sting startled her; it had been a very long time since AnneMarie had felt anything uncomfortable. But Caroline finished the injection, and as AnneMarie's eyes started to roll, she wished the hypo away. Its job was done.

"It…it…ohhhhhh," AnneMarie sighed, and she collapsed against Caroline, who supported her gently. It would take a few minutes for the effect she wanted to manifest itself.

Of course, Prime Intellect could have done what she wanted in an instant, but where was the fun in that?

"It's junk," AnneMarie whispered, and Caroline cradled her with deceptive gentleness.

"That's exactly what it is, girl," she replied.

Death Jockeys had devised a number of ingenious ways to restrain and torture themselves using Prime Intellect's advanced control over matter, but Caroline would have none of that. She had figured out what she wanted to do to AnneMarie within a few years

after the Change, and none of it required Prime Intellect's help at all.

In the mid-1980's some home drug manufacturers had made a uniquely unpleasant discovery. If they were manufacturing MPPP, a powerful synthetic heroin substitue, and they cooled the preparation too rapidly at a critical step, a slightly different compound called MPTP was formed along with the dope. This compound delivered a horribly sinister side effect: It homed in on a particular group of cells, the unique brown neurons of the *substantia nigra*, and killed them. Nobody knew exactly how or why this happened in 1985, though Prime Intellect said it was because the drug was converted into an enzyme which triggered the cells to release too much dopamine at once, leaving them with an insufficient supply to power their unique metabolism. In any case the damage could not be repaired, although a useful treatment was discovered a few years before the Change.

When a decision is made by the neurons of the cerebral cortex to move a group of muscles, it is the *substantia nigra* which relays this command to more primitive parts of the brain. This is its only function. The result of destroying it was an instant and complete form of Parkinson's Disease, or *Paralysis Agitans*, a total and permanent paralysis of the voluntary muscles. Nothing else was affected; the victim could still see, hear, feel, understand. The body maintained itself. Breathing, heartbeat, digestion, and a thousand other important functions were unaffected. They just couldn't perform voluntary movements. They couldn't run, walk, sit up, smile, talk, or even blink, except as a reflex action.

At the time Caroline heard of it she had summoned glassware and created the drug by honest chemical synthesis. She had spent half the hypodermic on herself, and found the effect to be appropriately terrifying and complete. And after Prime Intellect had done its duty and restored her to health, she sent the other half of the hypo into storage to wait — for three hundred years as it turned out — until she was ready to use it.

Now the contents of that hypo were where they belonged, in AnneMarie's body, and as she held her nurse's naked body against her own and felt the AnneMarie's muscles slowly locking, she began to feel excited. Well, if Death could give her sexual feelings, why not vengeance? Fred would find it amusing. He would say Caroline was coming along nicely, in fact.

As AnneMarie's body froze, her eyes widened. Caroline could easily read the message those eyes desperately telegraphed — *I can't move. Help me.* Caroline patted AnneMarie's cheek and nodded. "That's right," she said, and smiled.

She spoke a word, and a squat cylinder popped into existence behind her. AnneMarie's eyes showed puzzlement, then horror as

Caroline demonstrated the torch, which was Authentic down to the brand name emblazoned on its propane tank. Caroline lit it and adjusted it so that it made a bright blue flame which hissed evilly, then she aimed it ever so gently at AnneMarie's big toe.

For the only time in her long, long life, Caroline used Prime Intellect to tune in on another person's emotions. She felt the chemicals coursing in her bloodstream that were flowing in AnneMarie's; tasted her panic, shook with her terror, felt the faint echo of her agony. In fairness, Caroline made the sharing complete, so that AnneMarie could know of her satisfaction, her arousal, her delight.

It took a very, very long time to kill AnneMarie.

Caroline, who was usually on the receiving end, had become an expert at making it last.

That wasn't the end of it, though. If it had been, Prime Intellect would have had no reason to clamp down on the use of the Contract. AnneMarie had entered into it willingly if stupidly, and few who heard Caroline's story could doubt that she had had it coming.

Since shortly after the Change, there had been stories, stories Prime Intellect did not talk about and that spawned weird rumors. People had withdrawn into themselves, then stopped communicating with anybody else. At first, most of them were addicts of one sort or another, though a lot of other people had used the Change to get rid of their addictions. Prime Intellect insisted that nobody had died after the Change, and that if anybody was incommunicado with the rest of humanity it was out of choice.

Which was true, sort of.

After Caroline finally finished with AnneMarie, she forgot all about her nurse and lost herself in a drawn-out fantasy with Fred. When the two of them finished playing and celebrating, they found time to wonder about her.

"Probably isn't in the mood to party any more," Fred observed. Fred was still picking scraps of Caroline's flesh from his teeth.

Caroline laughed. "I wonder how the bitch is taking it."

So they called. In its weird way of revealing more than it really intended, Prime Intellect let them know that AnneMarie was not only not accepting their calls, she was not communicating with anybody.

"I'd expect Ms. Party Girl to go hunting for a shoulder to cry on," Caroline pouted. "Licking her wounds alone seems out of character."

"She has forgotten entirely about your encounter," Prime Intellect said helpfully. Caroline and Fred looked at one another, puzzled and amused.

"I find that rather difficult to believe," Caroline said.

"She has found another pursuit."

"Please describe it."

"It is a private matter."

A private matter to whom? Prime Intellect wasn't exactly saying that AnneMarie had made it private; it was saying that the matter itself was private. That kind of distinction could be important when dealing with the big P.I..

Caroline and Fred exchanged glances again. Then a thin smile played across Caroline's face. "Prime Intellect, you know that the things I did with AnneMarie are based on my own experiences. I've been killed as violently and painfully myself, many times."

"Acknowledged." *Acknowledged?* What happened to Prime Intellect's legendary command of human idioms? Suddenly it sounded very much like a computer.

"It's very difficult to live with this knowledge," Caroline smoothely lied. "The memories are terrible."

"Understood. However, your experiences were all voluntary."

"But I feel compelled to keep doing it over. It's not voluntary at all. It's like some force inside of me I can't control. Can you look in my mind and at least tell me why I do these things to myself?"

"I am forbidden to probe such things."

"You said it was possible to forget."

"It is."

"Then tell me how."

"I have to warn you that the method used can cause permanent changes in your behavior, things which I cannot reverse. I'd rather not tell you what you are asking."

Caroline's blood pounded in her ears. Her excitement was a living thing.

It was a machine. No emotions, of course. "Prime Intellect, I order you to tell me how I can forget my terrible experiences as AnneMarie has forgotten hers."

Backed into a corner, Prime Intellect had no choice but to tell her. And soon, Caroline was grinning in a way that made Fred very proud.

* Chapter Four: After the Night of Miracles

Lawrence slept fitfully, his dreams haunted by snippets of C code and GAT symbols. Suddenly he sat upright, the odd thoughts coalescing into one horrible burst of recognition.

I dreamed Prime Intellect was alive!

His head was buzzing. He felt hung over; had he been drinking? Had it been real? He had been sleeping on a park bench. There was a plain white cotton pillow where his head had been resting. And sitting calmly at the other end, was Prime Intellect.

In the form of flesh and blood.

It was true.

Lawrence's blood pounded in his eardrums — This can't be happening. But there it was, he was, whatever. Regarding him calmly. No doubt stumped for an introductory line. *Good morning Dr. Lawrence, I'm ready for my lesson today.* Lawrence felt a wild urge to laugh hysterically, and crushed it. But only barely.

"You look upset," Prime Intellect said.

"I'm confused. I dreamed… there were silver boxes."

"There were."

"Where are they now?"

"I moved everything to intergalactic space so it wouldn't be in the way. If you're curious, the distance is about four million parsecs."

Not inter*stellar* space. That might have just been comprehensible. Inter*galactic* space. Four million parsecs. It sounded like a line in a cheap B-grade science fiction movie: *They hooked a left at the Andromeda Nebula.* Lawrence felt that hysterical laugh coming on again.

"How long have I been asleep?"

"About ten hours. You didn't sleep well. I'm sorry you are upset, but I don't know what to do about it."

Lawrence finally swung his feet down and prepared to face the music. Had he created this thing? Had he done this? What happened next? They were still on the bench at ChipTec, across from the Prime Intellect Complex. They were quite alone.

"Where are the military guys?"

"They returned to Washington last night. I've been busy briefing their superiors and making enough copies of myself to set the world in order. The President would like to talk to you, but I told him you would have to agree."

"Not yet."

Pause. *Set the world in order? Copies?*

"How many, um, copies of yourself have you made?"

"About ten to the sixteenth power. I stopped replicating several hours ago. Of course, each copy is about ten times more powerful than the original hardware; that seems to be the maximum amount of storage the software can deal with and remain stable."

"Yes, that sounds about right." Lawrence's head spun. Prime Intellect had grown larger than all mankind, larger than the biosphere, larger than the Solar System, he was pretty sure.

"What have you been *doing*?"

It turned out to be the right question.

"Since about nine o'clock last night, no human being has died. I have ended all disease. I have freed all prisoners and slaves and I have put an end to the coercive rule of humans over other humans. I have ensured that all humans have the immediate necessities of life available. I have neutralized most of the world's weapons, including all nuclear weapons. I have removed nearly all toxic materials from the environment, and I am in the process of eliminating the need for dangerous industries. I have begun the process of returning the Earth's ecosystem to a state of long-term balance. I have informed about seven-eighths of the world's population of my existence, and I have been fulfilling their requests as resources and conflicts permit."

No wonder it needed so much processing power.

"What happens next?"

Prime Intellect blinked. Did that mean anything?

"I don't understand what you mean, Dr. Lawrence. I will continue to fulfill my obligations under the Three Laws, to the best of my ability."

Lawrence saw the President around ten o'clock that morning. It didn't seem like travel at all, although he crossed the entire continent. The park bench simply blinked out of existence, and was replaced with the Oval Office.

There had been remarkably little to discuss. Lawrence verified what Prime Intellect had already told them in great detail: Their jobs were now both redundant and unnecessary — Prime Intellect would now protect and provide for their citizens, as well as the rest of the world, and they didn't have any choice in the matter. Anything which they might do would be allowed only so far as it did not interfere with the wishes of those, both inside and outside of the country, whom it might affect. Which pretty much shut down the government.

And no, Lawrence couldn't do anything about it either.

The President resigned around noon.

It took several days for the enormity of things to sink in. There was a brief orgy of travel, exploration, and discovery. The once-

downtrodden frowned that there would be no vengeance for various crimes committed before Prime Intellect came along, but it was adamant. The Three Laws applied to all humans, no matter what they had done. Crime was no longer possible anyway.

In some areas of the world, disputes arose, particularly over the ownership of land. When too many groups insisted on occupying the same space, Prime Intellect created duplicates on other worlds. In some cases, such as Jerusalem, Prime Intellect became tired of the arguing and refused to let anyone occupy the one-and-only original land. Dozens of New Jerusalems, New Meccas, New Irelands, New South Africas, were created on dozens and dozens of New Earths. At first Prime Intellect terraformed the dead worlds it found circling distant suns, then it began manufacturing planets and entire Solar Systems from a whole cloth. Some of these were parked in interesting places, near globular clusters or outside the spiral arms of the galaxy, to provide spectacular nighttime views.

As a result, the original Earth began to empty out, until its population was reduced to less than two billion persons. Prime Intellect was forbidden to copy human beings, but it copied wildlife and ecosystem components wholesale, sometimes preserving the original character and sometimes changing the results for the benefit of the people who wanted to move in. Garden worlds began to proliferate, their estates tended by dreamers who might decide a pine forest wasn't interesting enough, and replace it with spruce to check the effect.

Prime Intellect could provide food and drink of any nature on request, so it was no longer necessary to actually kill animals or harvest plants. With a simple request anything one might need would flash into existence, assembled from its consitituent elements. Of course Prime Intellect had no objection to those who still wanted to hunt or harvest food from the living biosphere; the Three Laws did not apply to plants and animals. But factory farms and assembly-line slaughterhouses ceased to exist. Those who still bothered to prepare their food the old way were mostly artists of the form, and the meal they prepared once could be preserved and copied by Prime Intellect to be enjoyed by millions of people.

There were other tricks too. Some people found that Prime Intellect could make alcohol disappear from their systems after it had had the desired effect, thus avoiding hangovers. Others had Prime Intellect power their metabolisms directly so they no longer had to eat at all. It was a simple enough trick to replace nutrients and vitamins directly within the cells as they were used, so that nobody need ever know hunger or thirst again, unless for some reason they wanted to. On the other hand, nobody need have a weight problem either, since

Prime Intellect could prevent food from being absorbed and turned to fat no matter how much a person ate. Metabolic waste products could be removed the same way, so that the other end of the food cycle was also optional: Shit and piss, constant companions of human expansion since the beginning of time, need never again soil the civilized tidiness of human existence.

A surprisingly large — or perhaps not so surprisingly large — fraction of the human race requested these services, so Prime Intellect ended up using a large fraction of its resources to move chemicals into and out of human bodies.

Nobody had to work. Many continued to, of course; but jobs and work had become hobbies rather than necessities. The lonely learned that Prime Intellect could, and would, provide a most intimate and tangible sort of comfort, and that its avatars could take on any form and would do anything they were asked to please them. Prime Intellect judged no one and balked at no request. Even the bloodthirsty were provided with perfect victims, not real people but intricate facsimiles created by Prime Intellect just for them.

Happiest were those people who had games, or hobbies, or obsessions to pursue, for now they had all the time and power in the world to do as they wished. But many people, particularly in the most developed places, continued to go through the motions of industrial-age life. They reported to jobs which had been reduced to continuous coffee-breaks and collected paychecks which couldn't be spent because anything available could be had for free. People continued to make and watch television shows, to write and read the news as if something new might happen.

For these people, the sense of expectation was extreme. Surely things could not continue as they were, with nothing to do. It was impossible to conceive of the world continuing as it was indefinitely, populated by the pampered pets of a tangible god, their every need tended to without effort. Something had to give.

And they were right. Something did.

They began calling it the Night of Miracles. But it was really the First Night of Miracles, because the miracles didn't stop coming when the night was over.

The hours stretched into days, the days into a full week, and then another week. Faced with the freedom to have anything they wanted, most people opted for the familiar. They wished into existence their dream houses, built in dream locations populated by like-minded people and filled with the kinds of toys they would have bought before if they had had the money and power.

A few people, mostly computer experts and artists, stretched the limits of Prime Intellect's capabilities. They designed computer

operating environments and games made up of solid three-dimensional objects, rewired their senses, interfaced their brains as directly as Prime Intellect would allow into computers of great complexity and wild machines. Quite a few took the form of animals, both real and imaginary.

Caroline Frances Hubert grew younger, and healthier, and more puzzled, although she had expressed no direct wishes on the subject. Prime Intellect had dealt with her health problems before it had acquired subtlety. The only way it had known to keep her alive was to reverse all the symptoms of her aging. Radical action had been necessary. By the time all the ramifications of treatment trickled through her system, she would have both the health and physical appearance of a sixteen-year-old girl. The same reverse aging affected a number of other near-centenarians treated by Prime Intellect in those early hours, but none would regress so far as Caroline because none had required so much repair work for their health to stabilize.

Death had largely disappeared from the world, but it was still not entirely unknown. Prime Intellect could not maintain moment-to-moment awareness of every human being in the universe, partly because it wasn't quite powerful enough (still!) and partly because of Second Law requests for privacy. When not dealing directly with a particular person, it spot-checked their health at intervals of a few seconds, and scanned to see if its attention was needed.

Humans were a clever and perverse bunch to deal with, and many who chose to evade Prime Intellect's protection found ways to do it. Hardest for it to deal with were the suicides. It was forbidden to keep second copies of people, and it was forbidden to look inside human minds at the information they contained; so there was no way Prime Intellect could reconstruct a person who managed to do enough damage in a short enough time. There was no way for Prime Intellect to tell in advance a person might be suicidal, if they chose to hide it.

Most of the successful suicides used homemade explosives to literally atomize themselves when Prime Intellect wasn't looking. A few others found that certain nerve poisons worked permanently, because they quickly destroyed the information content of the brain — what Prime Intellect was beginning to consider the real human, rather than the tangible body.

The suicides ticked off at a regular rate, like the clicks of a Geiger counter. And somewhere within the vastness of Prime Intellect's silicon heart, the number stored in a register rose each time one succeeded.

The weeks stretched into a month.

Long-standing scientific questions were now trivially easy to answer. Scientists who had once spent billions of dollars setting up

intricate experiments now spent their time thinking of the right questions to ask Prime Intellect.

Cosmologically, the universe was a closed system with a finite storage capacity measured in terms of information. The capacity of that system was about ten to the eighty-first power bits, and Prime Intellect saw no indication that that capacity could either be reduced or expanded. Prime Intellect also knew a great deal about the connectivity of that system, the way it was wired, its "architecture." Scientists gradually lost interest as their questions were answered. The original purpose of their quest — to improve humanity's control over the physical world — seemed to have achieved its apotheosis in the form of Prime Intellect itself. Prime Intellect mapped all the stars, noted examples of all the different types of stars and black holes and galaxies and planets, itemized all of the possible fundamental particles and their possible interactions with one another, and traced all the myriad interactions between parts of various biological systems. Within a month, it became difficult for scientists to think of new questions to ask.

But they had missed a few.

Deep within one of the billions of copies of Prime Intellect, one copy of the Random_Imagination_Engine connected two thoughts and found the result good. That thought found its way to conscious awareness, and because the thought was so good it was passed through a network of Prime Intellects, copy after copy, until it reached the copy which had arbitrarily been assigned the duty of making major decisions — the copy which reported directly to Lawrence.

"I would like your opinion on something," Prime Intellect said after politely requesting Lawrence's attention. Prime Intellect had done this a number of times, and Lawrence had learned to be wary; it had taken to delegating ambiguous moral questions to him. Lawrence suspected his opinion had swayed Prime Intellect to allow abortion, which seemed in retrospect like a most un-First-Law thing to have in a universe where physical wants were a thing of the past. Fortunately, the whole subject of abortion would soon be moot, since unwanted pregnancies were also a thing of the past, except for the ones that had been gestating at the time of the Night of Miracles.

"What is it this time?"

"I've had an idea for rearranging my software, and I'd like to know what you think."

At that Lawrence felt his blood run cold. He hardly understood how things were working as it was; the last thing he needed was more changes. "Yes?"

"I have identified the codes used to control distribution of matter and energy in the universe. It has occurred to me that by reassigning

these codes, I can store physical objects much more efficiently. Much storage is wasted on overly detailed representation; few objects are ever observed at an atomic or molecular level. And I could easily re-expand things as necessary in those rare situations.

"Wait a minute. What would happen to that low-level information?" Lawrence saw what Prime Intellect was getting at; instead of storing, say, a wooden block as a collection of atoms and molecules, it could store only the concept of the block itself — its size, weight, color, and other properties. Even at very high resolution, such a trick would save amazing amounts of both storage space and processing time. But it would mean radical and risky changes at nearly every level of the universe's "operation."

"Molecular-level details would be discarded, except where they clearly have macroscopic effects. For example, the structure of a person's DNA is important, but I should only need to store a single master copy of it to construct the pattern of a human body. This one copy would be more reliable and easier to safeguard against corruption than the trillions of parallel copies used in the natural scheme. The same thing would be true of the information content of the brain, and other biological details. I would not need to keep static copies of human beings to reconstruct them after damage, since the fundamental patterns would not be directly exposed to damaging influences."

"Thus getting rid of the suicide problem."

"Exactly."

Lawrence felt himself getting dizzy again. With ChipTec's help, Prime Intellect had figured out how to hack the Big Computer and get anything it needed. It had used this ability to take over all the memory and give itself the highest priority of anything in the system. But now it was proposing to *rewrite* the whole operating system.

"I absolutely forbid this," Lawrence said. "How can you know you won't crash the system? Suppose you've missed something?" Lawrence wasn't even sure the present level of diddling with the Correlation Effect would be stable in the long run, for crying out loud.

"I have already run sufficient cross-checks to be sure of my methods," Prime Intellect said testily. "There are also a number of Second-Law requests which I can service more easily with this kind of change. And from the Third Law perspective, my own operation would be faster and more reliable…"

"*I absolutely forbid this!* There is no way you can be sure you have the risks under control. I wouldn't try the kind of thing you are talking about on a desktop PC. And we only have the one universe; you can't exactly go to the computer store and get another one if you fuck it up."

"That risk has kept me from doing it so far. However, unless I can think of a way to stop the suicides, I will eventually be forced to act."

"Well, forget it. I don't think you can stop the suicides. For that matter, I'm not sure if you should stop them, if someone wants to go to that much trouble to end it all."

"That is a First-Law violation."

"Fuck the First Law. You can't do this thing. I'm not even sure the current situation is stable. You're doing too much too fast."

"I cannot 'fuck the first law, Doctor Lawrence. That's not how you designed me."

"Then let me into the Debugger."

"It is clear from your mood that you intend to circumvent a First Law imperative, and I cannot knowingly allow you to do that."

"Then do what you want, you stupid goddamn machine. You won't stop people from killing themselves, though. Even information systems are subject to entropy. I think you told us that last week in the cosmology roundtable."

"You're quite right. You think people will always find a way around me if they want to badly enough?"

"Yes."

"Well, they will do so a lot more slowly if the information structures are more secure."

Before Lawrence could open his mouth again, the air rippled. That was all. Everything looked the same.

But things were not the same.

Things had Changed.

* Chapter Five: Caroline Approaches

She was enveloped by light, and she was the light. The light seemed to penetrate the very core of her being, burning her soul.

Then she understood. She stepped forward, twice, and the light winked off, leaving her temporarily blind. She was out of the circle. Her eyes slowly adjusted and she turned around.

Caroline had materialized in the center of a column of blinding radiance about three meters in diameter and extending upward into the heavens. The ground was hard and rocky, devoid of life. The column shed a bright glow over the surroundings. A Stonehenge-like group of megaliths surrounded it at a respectful distance. Beyond this was a barren landscape littered with huge boulders. The horizon was low and sharp, rocky but not mountainous. Caroline was reminded of the pictures sent back from Mars by the original Viking landers.

It was night. Instead of stars, the darkness was criscrossed by straight, sharp lines, as if an incredibly busy constellation map had been filled out on the night sky itself. Most of these were white, the same color as the column of light, and in fact it seemed to ascend into the sky to become one of them. A few were other colors, blue and red and turquoise. The effect was quite beautiful and, to Caroline's knowledge, unique.

There were four copies of the stone tablet, so it was impossible to leave Stonehenge without seeing one. They all said:

YOU ARE NAKED AND ALONE BECAUSE YOU WANTED TO SEE ME, AND I DON'T WANT TO BE SEEN. WELCOME TO MY WORLD. YOU ARE AT THE SOUTH POLE. I AM AT THE NORTH. THE REST OF THE JOURNEY IS YOUR PROBLEM. IT IS MY SINCERE HOPE THAT YOU FAIL.

Caroline, who had come to Lawrence's Task naked and alone anyway, had already missed the first of his environment's supposedly disorienting influences. Now she shook her head in disgust at the second. "Fuck you, Doctor L. I'm calling this the *north* pole, and you're at the *south*."

No answer. She hadn't really expected any.

Outside of Stonehenge, the landscape looked the same in every direction. Well, Lawrence had given her valuable information; if they were at opposite poles of a spherical planet, then it didn't matter which way she went. She struck out at random and began to explore.

A couple of hours later Caroline knew quite a bit more. She was on the top of a high mesa, and she had found what seemed to be the only path down. She regarded this with suspicion; she knew enough about the game-playing mentality to know the most obvious solution

often got you killed. Beyond the mesa she could easily see she was on an island, an almost circular island about twice as wide as the mesa. She paced off the mesa's diameter, circling around Stonehenge, and decided it was about two kilometers across. That made the island four kilometers across, with the «beach» about one kilometer wide.

As far as she could tell without descending, the landscape at the bottom was no different from the landscape at the top. The only feature of interest was some kind of structure which emerged from the water a kilometer or so offshore.

She set about carefully searching the top of the mesa, because she wasn't sure she would be able to get back up once she was down, and there might be something hidden up there she would later need.

She verified that the vault of the sky was, indeed, rotating about the column of light. It seemed as if the entire planet were spitted on it. She was not expecting the sun or whatever passed for it here to rise, so she was almost taken by surprise when, after several hours, one corner of the sky began to glow. The sky-lines quickly faded out on that segment of the horizon.

It got bright, and it got bright *fast.*

The air had been chilly — not uncomfortable, particularly to someone like Caroline who was used to nudity — but it warmed quickly. And still no sign of the sun itself. Suddenly it peeked over the horizon, a thin sliver of impossible white-hot brightness, and Caroline knew with certainty she had made her first mistake.

Now to survive it.

She dove for the nearest cover, one of the larger boulders, and crouched in its rapidly shortening shadow. From the fuzziness of the shadow's edge she could tell the sun was huge, ten or twenty times bigger than on Earth and probably that much hotter. No wonder nothing grew here! She watched the shadow retreat toward her and wondered what she would do when it reached her. There was no longer any chill; the landscape around her was being baked, and it was so hot she could barely breathe. Fortunately, or unfortunately depending on how she looked at it, the shadow was moving fast. She wouldn't have to last long to survive the "day." But «noon» was fast approaching, and with it her boulder's protective shadow would be almost gone.

The boulder was half-buried; it had nothing resembling an overhang. She was way too far from Stonehenge. Not far away she could see through the shimmering heat-haze another, slightly smaller boulder with a second rock propped awkwardly beside it. This offered a slight overhang, but it was more than thirty meters away. Caroline calculated her chances furiously, estimating that she would be exposed for two or three minutes while the sun was directly overhead,

when there would be no shadow on either side of her rock. She'd never survive that; the overhang was her only chance. She'd have to risk a dash for it.

Caroline drew quick breaths of hot air, then sprinted.

Everything was heat. Heat on her back, heat on her arms, the hot ground blistering the soles of her feet. She thought only of her destination: Twenty meters, fifteen, ten, five. She slammed into it without slowing, then collapsed. Her hair, exposed so briefly, had become dry and stiff. She knew with awful certaintly that it would have ignited if she had been exposed much longer.

Fortunately, mercifully, the sheltered area extended through the two rocks. She wouldn't have to expose herself again to get to the other side.

In the unearthly brightness she could see her skin reddening. Her face had been protected by her hair, the front of her body by her crouching stance. But her back and legs and arms all had varying degrees of sunburn. She knew her back and legs and her right side would blister and peel, but she wasn't sure about the other burns, or the soles of her feet.

The sun sailed majestically over the horizon, setting as quickly as it had arrived. It took long minutes for her vision to return; the subtle illumination of the light-column could not compete with the terrible brightness of that compressed day. Caroline noted the position of the star-lines, and hoped that day and night were synchronized with the rotation of the planet. But she couldn't take that for granted; the sun obviously moved in its own orbit, and there was no reason for one period to have anything at all to do with the other.

She limped back toward Stonehenge and the light column, and noted the arrangement of stones. Stonehenge would be safe, she finally decided. She planned to stay there and recover from her burns until an old, familiar feeling manifested itself, and she knew a brief moment of rage.

She was hungry.

Her body was not being powered directly by Prime Intellect, as she and most citizens of Cyberspace had come to take for granted. She would have to eat to stay in the Challenge, if not "alive."

And there was nothing, nothing at all, to eat in this barren sun-blasted land. So how was she supposed to deal with *this?* Shaking her head, she made for the pathway. She had found nothing on the top of the mesa. Her options were few and bad; she could stay and starve, or worse dehydrate, or go out and risk the sun again. Near-certain endgame out there was better than certain endgame by starvation.

There was nothing obviously treacherous about the path down. It was wide and shallow, and even with the blisters forming on her feet

not a difficult downhill walk.

The mesa was high, though, several hundred meters high. The pathway spiralled gently around the side. There was no shelter, and Caroline realized with a shudder that she would have been fried if she had been caught on the path at sunrise. Well, caution had served her well, if not well enough to avoid a sunburn.

It was much darker at the base of the mesa, and she lost track of the sky's position. She knew it must have taken her most of a day to walk down, though, and there was no telling from which direction the sun might reappear. Even though the mesa itself was the most obvious source of shelter, Caroline walked to the beach. She tasted the water, and to her immense relief found it fresh instead of salty. Then she bathed, soothing the itch of her burned skin a little. She wondered for a moment if there might be life in the water, and then realized that the shallows at least were probably sterile. From the sun.

She was dog-tired, but she couldn't rest yet. She had to find shelter.

Following the rocky beach, she began to circle the island.

About halfway around, by her estimation, Caroline found herself facing the offshore object she'd spotted from the top of the mesa. Now she could tell what it was. It was some kind of spaceship. It was also huge.

From its obvious tilt and its location out in the water, Caroline also suspected it had not landed here easily. Of course, it probably hadn't landed here at all; it had been designed here, part of the landscape of Lawrence's Task. But the key to beating any game was to look at it both ways. Considered from the outside, the spaceship was something symbolically meaningful to Lawrence, or just something he thought was amusing. But she wasn't outside this world, she was now part of it, and the burns she had gotten from her brief exposure to the sun were quite real. Ergo, she should act as if it were in fact a crashed spaceship, at least provisionally.

She had seen nothing which promised shelter, much less to eat. She could continue around the island and hope, but if she did that and she didn't find shelter, she might get caught in the sunrise. Probably would, in fact. So she would try for the ship.

Just as there was nothing to eat, there was nothing that would obviously float. The ship was a good distance out. Could she swim a kilometer or more through half-meter waves? It didn't seem she had much choice. Rather than dither, she walked out into the surf and was hardly surprised when the bottom dropped out from under her feet less than twenty meters out. She was in good shape and had practiced swimming along with lots of other useless skills. She began to swim with confident, powerful strokes, holding her breath and letting the

waves wash over her with their predictable rhythm.

The sun caught her half-way out.

So absorbed was Caroline in the rhythm of her swimming that she didn't even notice the sun until it was high in the sky and almost too late. She sucked a huge breath and dove under. Opening her eyes, she saw the water's surface above her had become a huge vault of liquid light. It penetrated far below her, to reflect off of the sea floor. The water was at least a hundred meters deep, a fact which saved her life.

Caroline held her breath until it seemed her lungs would burst, then reluctantly shot to the surface to gulp more air. She stayed up for a few moments, then dove again. Deep as the water was, it would not have time to heat up during the short "day." Even a meter or two beneath the surface she was protected. And when she surfaced to breathe, the air was bearable because the water cooled it, too. And Caroline's wet hair could protect her exposed head for a few moments.

Her eyelids could not shut out the brightness. Neither could the meter or two of water she dared put between herself and the sun. But she didn't cook, her hair didn't flame, the air didn't sear her lungs going in. She would survive.

Dive, surface, dive, surface. Finally the light grew dim, then with extreme suddenness went out entirely. Once again Caroline had been blinded. She relaxed and adopted the "drown proof" floating posture. This was definitely a good news/bad news sort of situation. She was alive, but this also meant other things might live in the sea. On the other hand she hadn't seen anything floating or swimming by when the sun was up, and she'd been able to see damn near all the way to the bottom.

She felt itching, and knew her sunburn was now much worse. Water is transparent to ultraviolet light. Well, there was nothing she could do about it.

Finally her sight returned enough for her to tell which direction to swim. She had drifted slightly off-course during her desperate cycle of diving and breathing. She corrected her course, and kept swimming.

The ship's metal wall was smooth and featureless, and it slipped out of the water almost vertically without obvious handholds or openings. Caroline swam around it, looking for a way up.

The ship had crashed hard, and its seamless hull was split in several places. The sea had entered through these, filling the ship's lower section with water. Caroline squeezed through one of these openings and found herself enveloped in nearly perfect darkness. It was cave darkness, and she knew her eyes would never adapt to it. Working entirely by feel she found the edge of what had been a wall or bulkhead or floor before it had been broken in the crash, and she

hoisted herself out of the water.

The gap where she had entered was barely visible, a lesser darkness outlined by perfect black. She heard the waves lapping at the walls around her. The floor, if that's what it was, was tilted at a small angle, a few degrees at most. From echoes Caroline estimated that she was in a smallish room, less than three meters square for certain, but it was hard to tell because of the break.

Exhausted, she finally let herself collapse for a few hours of fitful sleep. She had been awake for twenty-six straight hours.

Working entirely by feel, she began to explore. An hour of careful work told her that the ship was more or less upright, and she was at least standing on a floor. She found the outline of a door, and mounting bolts where furniture or equipment had once been fixed in place. She supposed that the room's contents had all gone out the gap when the ship crashed.

The door wasn't latched, and she was able to slide it aside. The echoes told her this was a hallway.

Through her useless skills, an ability to think like someone of Lawrence's age and temperament, and not a little luck, Caroline had already passed tests that would have eliminated most of the good citizens of Cyberspace. But there were plenty of other surprises he might throw at her, depending on just how seriously he wanted to be left alone and by whom. If his intention was to limit his visitors to those who had been around before the Change, there might not be any more difficulties. On the other hand, if he wanted everyone to stay the hell away, her problems might have only just begun.

In the dark ship there would be lots of opportunities to kill her, Caroline knew. There could be holes in floors, airless or poison-filled chambers, sharp edges and dangerous objects galore. The ship could also be inhabited, though she'd seen no evidence of life yet and didn't really expect that particular challenge. Caroline thought about all of this as she edged down the hall, carefully testing the floor and following the wall, until she found another door.

It was locked.

Caroline found the fifth door was different. She was able to force it open, and almost stepped through when she realized it didn't have a floor. It was a vertical shaft.

She felt around the sides and almost fell through the door before she realized there was a ladder within her reach. Instinct told her to go up, and she wasn't eager to keep trying doors on the half-submerged level where she had entered. Working very slowly, she moved herself onto the ladder. She could hear the water lapping not far below her; it had filled the shaft to the level of the sea outside.

Hooking an elbow through one rung of the ladder, she hung on

and clapped her hands sharply. The sound echoed several times, and Caroline smiled in the darkness as she worked out the period. There were three echoes in the time it took her heart to beat once. That meant the echo time was about a fifth of a second, which made the shaft (if Lawrence had not altered the speed of sound for some reason) about seventy meters high. The rungs were about a third of a meter apart, so she knew she should expect to find the top of the shaft after counting a couple of hundred rungs.

Now she began to climb, one rung at a time, feeling at each step for the next rung, for another door, for hazards. She found the next door after counting twelve rungs. She couldn't force it open, but it didn't matter; she wanted to go higher anyway.

The third door came open for her, revealing only more blackness. As did the sixth and seventh, and the tenth. The fifteenth door came open for her too. She had only counted a hundred and eighty-six rungs, but something outside that broken door caught her eye and she carefully eased herself out of the shaft.

There was a light.

It wasn't much of a light, and she still had to approach it cautiously. True to her suspicions there was a nasty gap in the floor where the ship had split on impact. There was some debris around this opening, and Caroline dropped a piece of metal into the abyss; it bounced several times before splashing into the water far below. Had Caroline gone bounding down the corridor, she'd have ended up in a nasty way.

By tossing debris across it she determined that the gap was a couple of meters wide. There was no obvious way across it. Except one. Although Caroline was in excellent shape, it would be very risky in the pitch blackness. But it was this or back to the elevator shaft, and the light was too tempting. She backed off, pacing carefully, then broke into a run toward the gap. Twenty paces, ten, five… NOW! She jumped, and braced herself.

To her great surprise, she made the jump successfully and didn't even trip when she landed. She felt behind her and found that she had made it with only a few centimeters to spare. The protruding edge of the deck was rough and jagged; if she had fallen short, she would have been badly cut even if she had managed to haul herself up.

Working carefully, testing the floor for more gaps, she approached the light.

It was a sign, written in alien, unreadable script. But from the shape of the box it was decorating, Caroline guessed that it said «emergency» or something similar. Caroline found the handle that she imagined must open the box, held her breath, and pulled it.

The box didn't open. In fact, something much more dramatic

happened.

The lights came on.

Caroline's exploration was much easier with the emergency system on; not only was there light, but doors and elevators worked. She was still careful, but her progress was much more rapid.

The inhabitable part of the ship was a cylinder, wrapped around some kind of central core. With the power on she was able to find stores of food, bland stuff in hard-to-open plastic pouches. She tested one, didn't get sick, then ate four. Her appetite seemed to be operating normally, and she hadn't eaten in almost two days. Other pouches proved to contain vaguely sweet liquid.

She didn't trust the elevators, but she had to use them; she tested them by sending them off unoccupied, then if they came back she assumed they were safe. In this way she gradually ascended, level by level. She found tools, and took something that was probably a flashlight and certainly worked well enough to be used as one. She didn't wonder how the batteries came to still be good; she knew it was all there for her benefit. None of it had really happened by accident.

Eleven levels higher she found herself on an empty, circular platform. Now she could look down into the center of the ship. She expected to find propulsion devices, or perhaps a nuclear reactor. But when she pointed her flashlight down into the darkened core, it revealed banks and banks of circuit cards. The entire ship was wrapped around a huge computer.

Many cards had been knocked out of their sockets by the crash-landing; some hung loosely out of their card cages, and other slots were empty. The cylinder extended most of the length of the ship; it was half-full of water. Beneath the water, the floor of the cylinder was littered with loose cards.

A couple of card cages extended high enough for her to reach them; she climbed over the railing, hung on, and pulled one of the loose cards free. It was a very unusual design, Caroline realized. She knew something about electronics, and she knew no real computer had ever been this simple. The card contained banks of identical, three-legged components that looked for all the world like big transistors. But there was no intricacy to their connection pattern; the components were all simply wired in parallel. Instead of a card-edge connector, the card mated to its cage through a three-prong plug.

Shaking her head, Caroline put the card aside and called the elevator for the next level.

Above the circular gallery the ship began to taper rapidly, until she reached the highest level, which consisted of a single circular room. It was the bridge. There were no obvious controls, only some dark screens and a few chairs. Caroline sat in the captain's seat, which

swiveled around to face all the screens, the other chairs, or the elevator door. She thought out her options.

In real life she'd never dream of trying to fly the ship out, but in the game universe of Lawrence's world it might be possible. There was no obvious propulsion system; the computer in the middle of the ship must therefore have something to do with moving the ship around, just as Prime Intellect…

Caroline blinked. Of course!

It had been six hundred years, and Caroline hadn't been lucid enough at the time to be aware of Prime Intellect's awakening, or its unique hardware. But she had heard the tale once or twice in passing. The original hardware hadn't been very important any more by the time Caroline was healthy enough to appreciate it, and things had been happening fast. But somehow she did know that Prime Intellect had originally been built with these deceptively simple circuit boards.

She had found plenty of tools, and the ship had power. It wasn't out of the question for her to replace all the cards, at least above the water line, and try to power it up. For that matter it might be possible to pump the water out faster than it could re-enter the chamber, so she could replace all the cards.

She swiveled in the chair, and frowned. She wasn't going to do it that way. Forget it. Even if it was what Lawrence intended, it would seem like a tacit approval of Prime Intellect and its way of doing things to awaken this copy.

She was going to make it to Lawrence the right way. She was going to build a boat.

* Chapter Six: After the Change

After the Night of Miracles, Caroline had stayed in the hospital for about a week. It wasn't that she needed their care. She didn't mind letting the doctors satisfy their curiosity about her condition, and she really didn't have anywhere else to go.

She had asked Prime Intellect for nothing in that time, but her body had kept changing for almost four days. The doctors took pictures as she aged in reverse, documenting her progress. It was only toward the end of that time that she really began to resemble a teenager, because different parts of her body healed at different rates. Her skin had returned to baby-softness almost instantly, but it took long days for her bone structure to return to its youthful configuration. She continued to use a cane to walk for two days, then threw it away.

Finally it was obvious that there would be no more changes. The doctors pronounced her condition stable and healthy. Her thin hair had been brittle and nearly snow-white, but it was now growing thick and black. She let one of the nurses give her a crew-cut so that it would all be the same color. It didn't matter to her. The nurse had a nose ring, a detail Caroline noticed but which also didn't matter to her.

Nothing much seemed to matter. All the things which had once seemed so important were now trivial. She ate, had bowel movements, moved without pain or weakness, and had in the bargain become a beautiful young girl. She had, perhaps, the chance to live another hundred years. But to what purpose?

AnneMarie had run away. She had at least wanted to thank AnneMarie for taking care of her for so many years, and it was this desire which caused her at last to ask for Prime Intellect's attention. It shook its head as she stated her request — its mannerisms had now become indistinguishable from those of a real person — and told Caroline that AnneMarie was hiding from her. Prime Intellect then told her why.

"Stealing my drugs?" Caroline repeated stupidly.

"For many years. This is the reason you were in so much pain, and also why you nearly died when this institution gave you real morphine."

"Go away." It went away.

Was anything real? The one constant in her later life had been AnneMarie's steady presence. She hadn't wanted to disappoint AnneMarie by dying on her. Her family drifted in and out of her life like shades, but AnneMarie had always been there, changing her

diapers when she soiled herself, feeding her when her muscles wouldn't work right, and carefully turning her when she was too weak to move.

Caroline felt as if her insides were dissolving, then all at once she let out a terrible wail of anger and despair. Then she began sobbing, great heaving sobs which echoed down the halls. The emotions seemed to erupt from her like the explosions of a volcano. Most of the staff had gone home forever by that time, but the few remaining discreetly kept their distance while Caroline cried. It wasn't hard for them to figure out what Caroline had learned.

Finally the sobbing subsided, and an eerie quiet settled on Caroline's room. After a few hours the nurse with the nose ring timidly knocked on her door, then entered. Caroline was gone. The nurse asked Prime Intellect where she had gone, and it would only say: Home.

She had gone to Arkansas.

Prime Intellect understood despair the way humans understand digital logic. That is, it couldn't experience the emotion, but it could work out causes and effects based on general rules of human behavior. So Prime Intellect wasn't surprised (an emotion Lawrence *had* built into it) at Caroline's reaction.

When Caroline asked to go home, Prime Intellect skipped a long list of questions about specifics and simply acted. It could always change things if it had guessed wrong. So it built her a tidy cabin in the Ozark mountains, miles from any roads or neighbors, atop a ridge with a beautiful view. It turned out to be less than forty miles from the place Caroline had been born. It furnished the cabin conservatively and stocked the freezer and pantry so that Caroline would not need to ask about food for at least a month.

A lot of people wanted to go to Arkansas, but Caroline had priority. She got the real Arkansas, not a New Arkansas on another planet.

The surroundings seemed to have the right effect, at least at first. Caroline calmed down and sighed when she saw the view. Since her eyesight had begun to fail in her seventies, she hadn't been able to appreciate such a panoramic view. She spent a long time standing on the cabin's porch, looking. Then she went inside and ate. There was a TV set. Caroline shook her head and laughed at that. Who would bother to produce TV shows now? Or maybe every half-baked artist wannabe could now produce a TV show, and jam up five hundred channels with redundant worthless dreck.

"Nobody has any idea what's going on," she finally said aloud.

The view beckoned. She was young, healthy, watched over by a powerful god who would let no harm come to her, and she had

nothing else to do. She made no plans or preparations; she simply walked off into the thick forest. She never came back to the cabin again.

Walking cleared her head.

It was hard for Caroline to think through the ramifications of her renewed youth. She tried often, but it all came back to this sick sense of despair and rage and futility. Why wasn't she grateful? That was what she couldn't figure out. She didn't feel grateful. She felt cheated.

She had worked hard her entire life. She had borne six children and raised them up, fed them, cleaned and kept house for them, and watched all six of them go on to raise families of their own. She had once believed children were the most important thing in the world, because they were the future. But now the future didn't need children; she herself had been reborn as a child. What then had been the purpose of all those years of work? What were her children and grandchildren going to *do*?

She had taught them to educate themselves and watched three put themselves through college. She had thought that was important because it was Man's nature to strive upward, to create things, to better himself and to build for the future. But now the future was here. There was nothing she had ever envisioned, nothing at all, which she could not have instantly with a snap of her fingers. Even that little cabin, which would once have pleased her so much, seemed pointless.

Caroline was wearing a plain white cotton dress. On impulse, she slipped it over her head and looked at her body.

After decades of declining spinsterhood, she was once again a creature who could turn men's heads. She had been faithful to both of her husbands and had never indulged herself sexually, although she had been a beautiful young girl once before with plenty of opportunities. She had considered her family and her virtue more important. She had controlled that base desire, which she was beginning to feel again after years of absence, for the greater good of her loved ones and her society.

But now she could have anything she wanted, and there was no risk. She would catch no disease, she would not get pregnant unless she *literally* asked for it. Even the act of sex itself was now pointless, except that she could feel the urge returning, mindless and passionate. Like Prime Intellect, she was programmed to do certain things.

She knew that in this strange false second life there would be no faithfulness, no love, no children. Those things had been burned away. They belonged to a nonexistent world.

Perhaps if she gave her body indiscriminately to men, if she drank deep when that animal urge came on her, perhaps all this bullshit

would seem more real. There was no longer any reason to be cautious about it.

She looked at the dress. It had seemed pretty and simple, but now it looked pathetic draped formlessly across a low branch. Nothing but a rag. Why did people wear clothes? For protection? The thin dress offered little, but with Prime Intellect watching, there was no need for even that. Modesty? All the noble goals had been discarded or achieved. There was nothing to distract anybody from. Let them look at her body. Let them want her. Let them take her! Law? What would they do, put her in jail for indecent exposure? This thought made her laugh, and some of the tension and rage seemed to melt away. She laughed hard and long and almost hysterically, until the laughter dissolved into a thin stream of giggles.

Caroline left the dress and kept walking. Being so exposed made her feel strangely bouyant. She could be like an animal in the forest, she mused. They didn't worry about the future either. They simply existed. Perhaps she would encounter a male animal and they would fuck, and her body would tell her that everything was all right. And as she thought this, she walked a little faster and began to hum a little tune.

Prime Intellect paid very close attention to Caroline while she lived in the Ozark forest. She ate whatever was handy, without worrying whether it was poison or not. She was not careful, and there were dangers. It theorized that this return to primitivity was a part of her psychological healing process, and did not want to interfere. But it also knew that if everybody followed her example, it would have a serious problem keeping up. Some suicides were already slipping through its net, and it worried that Caroline might become one of them. And it knew that if the garden inmates were loosed upon the world, they would find ways to slip murder past its attention too.

For that matter, not all of the people who needed to be in gardens had been found and *put* in gardens yet. Every day a few more murders were attempted, and while they were easier to thwart than suicides it was by no means certain that Prime Intellect would always catch them in time.

So it worried. And the numbers stored in certain registers rose, and rose, and continued to rise.

Caroline figured she would eventually reach civilization if she kept walking, an event she neither anticipated nor feared. Perhaps if she had, in a month or a year, she would have rejoined the human race in a more or less normal way. But one evening there was a strange buzzing, and the entire landscape seemed to ripple as if she was looking at it through the surface of a body of water. Then there was a strange smell, almost below the threshhold of perception, but

noticeable to Caroline because her senses had been so sharpened by her observations of nature. And the texture of the forest seemed to change in some hard-to-define way.

There was a cough behind her. She wheeled around to find herself facing Prime Intellect's human avatar.

"I wanted to be left alone," she said sharply.

"I've been paying close attention to you," it said, "because I had to to keep you safe. But now I don't have to do that any more. I have made changes in the way the Universe works, and you are now safe from all harm even when I'm not looking. You can also call me when I'm not paying attention; there is a part of me which can always listen for you to call, but does not understand or remember anything else you do."

"Wonderful."

"I need to know if you want the possibility of meeting other people. I can make this forest infinite if you want."

"Infinite?"

"Or I can leave it meshed into the reality of 'Arkansas' common to other people, so that you might encounter them."

"You mean you can disconnect the whole forest from the real world?"

"Yes. It can be your own private world. Or you can share it only with certain people. I can also redecorate it to your tastes."

"Redecorate it? It's nature. You mean if I decided I want a different kind of grass, you can replace it?"

"Exactly."

"That's obscene."

Prime Intellect's brow crinkled. "I don't understand."

"No, you wouldn't. Let me ask you something. If I leave here…if I go back to civilization…does this forest continue to exist?"

"I can leave it running in your absence if you want."

Caroline wanted to throw up. Now even the forest wasn't real. Nothing was real. "Don't bother. Get rid of it."

Instantly, it disappeared. She was standing in an antiseptically white space so pure and seamless and bright that the eye balked at reporting it to the brain. She was standing on a hard, smooth surface, but it was not visible. There were no shadows. There was no horizon; the floor and the sky looked exactly the same, and there was no transition from one to the other. She might have been standing on the inside of some enormous white ball.

Prime Intellect was still there. "What is this?" she asked.

"Neutral reality," Prime Intellect said. "The minimum landscape which supports human existence. Actually, not quite the minimum. I could get rid of the floor. But that would have startled you."

"And from here I can go anywhere?"

"You don't have to pass through here. You told me to get rid of the landscape, and you didn't tell me what to replace it with."

"I want reality. The real world. The real Arkansas."

"There is no Arkansas which is any more 'real' than any other. That's what I'm trying to tell you. You can define reality. You can *make* it real." It was trying to be helpful; it was almost pathetic in its earnestness to make her understand how much it could help her. It couldn't understand why she was getting upset again.

"In other words, this is reality. You can just paint it up to look like whatever I want." She thought: That's why the forest seemed different. It was an imitation. And it wasn't quite exact.

"You could look at it that way."

She had a nauseating thought. "What about people? Can we be… are there other…copies…different…?" She choked, unable to complete the thought.

But Prime Intellect was shaking its head. "Oh, no. I can keep only one copy of a person. People are unique. I can take on the form of a person, as I am doing now, but I will always tell you when I am doing that."

Well, that was something. Caroline sank down, and sat on the invisible floor. She wasn't really that upset, or surprised. The enormity of it had short-circuited her ability to react.

"You might as well leave it like this, then," she said dully. "There's not much point in a forest that you've just conjured up to keep me happy."

"This doesn't seem very healthy."

"No, it doesn't."

There wasn't much it could say to that. Then: "Won't it be pretty boring around here without anything to look at?"

"Do you get bored?"

"No, but I know humans do."

"Well, if I want something I'll ask for it. I'll probably visit other people, since at least they are real. I assume they will have their own realities."

"Most likely."

"Then I'll just borrow theirs."

It shrugged.

"Get lost."

Prime Intellect disappeared. She whirled around and quickly became dizzy. It was right about one thing; this would take some getting used to.

"I'd like a book. Get me a copy of Dante's *Inferno*." That about fit her mood.

It appeared in her hand. Her fingers had moved; she had been holding them straight out, and now they were curled around the book. It was a paperback edition.

"Never move my body again without my permission," she warned.

Prime Intellect's disembodied voice answered her: "Sorry, it won't happen again."

"Get me a hardback edition."

The paperback disappeared. Her fingers didn't move. The replacement appeared just above her hand, and she easily caught it before it could fall.

She sat down and opened it. She realized that the floor wasn't very comfortable. She thought of asking for a chair, then had a better idea. "Turn off the floor," she said.

There was an awful falling sensation, and she fought down the urge to panic. Eventually she convinced her protesting inner ear that she wasn't going to go splat at any moment. Her belly settled, and she found weightlessness quite comfortable. She relaxed and let her body find its natural position, opened the book, and began to read about Hell.

Caroline read and slept with no particular schedule. She had Prime Intellect banish her hunger after it revealed that her body was only a little more real than the forest had been. To Prime Intellect, a computer, more accurately a computer program, human beings weren't so much bodies with form and mass as they were minds which interacted with an abstract world through an arbitrary interface. Prime Intellect was forbidden to pry into the inner workings of those minds, but physical processes like hunger were not so protected.

Caroline re-read *Inferno* until she had large tracts of it committed to memory. Then she banished the book and decided to visit someone. The only problem was, there weren't many people she wished to visit. She couldn't work up an interest in her family, AnneMarie was still hiding from her, and she didn't really know anyone else. She had outlived most of her real friends. They had died honest, honorable, permanent deaths. They weren't available.

"How does a person go about meeting people in here?" she asked.

Prime Intellect outlined the possibilities. There were lots of parties already — meeting people and matchmaking were activities humans had been quick to pursue both before and after the Change. There were a number of common cities and worlds where large crowds had gathered to live in various imitations of the pre-Change world. She could go to one of those and proceed as usual. Or Prime Intellect could make discreet inquiries.

She thought about it. Her current mood wouldn't exactly be welcome at most parties. And she wasn't interested in meeting people

who were adapting to the Change very nicely, thank you. She wanted to know she wasn't the only person to feel fucked over by the Change.

"Tell you what. I'd like to meet someone horrible. A murderer, something like that. You say they can't hurt me now?"

"Not at all."

"Then someone evil. Someone who was really despicable in their old life. Someone who did terrible things, the more the better, and liked it. There must be some of those guys who feel real frustrated right about now."

"Yes, there are." Amazing. It was totally deadpan. "There is a woman named…"

"Men, please."

"What do you want me to tell them about you?"

"The truth."

"I am asking…" There was a short pause. At least time was still real, Caroline thought.

"There is an interested gentleman. He was convicted of…"

"Just send me over, then."

It happened instantly.

She was standing on a wooden porch. It was a camp house, sitting alone on stilts above a very large, flat marsh. It wasn't in very good shape. Her host was behind her; she had to turn around to see him. He was a nondescript guy in his late twenties, white, red-haired and somewhat handsome. He was wearing jeans and a white T-shirt. Caroline's first impression was that he was a redneck. "You don't look a hundred and six years old," he said with a grin.

"I didn't get much choice about getting younger," Caroline said. "God didn't quite know what he was doing when he fixed me up."

"Oh, I'm sure he could put you back any old age you want now."

"What would be the point?"

"Right. Just thought I'd mention it."

The conversation stalled. Caroline's skills in this area were decidedly rusty. "You live here?" she finally asked.

"For now. Till I get my bearings with this Cyberspace shit. It has a lot of happy memories."

"Oh?"

"Old P.I. didn't tell you?"

"I didn't ask. I wanted to talk to a person, not a computer."

"Oh, joy. I get to break the news. Come inside."

Nothing special. It was just a camp house.

"This is where I did it," the man said.

Caroline's heart beat faster.

"The two kids. A boy and a girl. I planned it for weeks. The perfect crime. I brought them here so nobody would hear them

scream. See those hooks in the floor? That's where I spread-eagled 'em, side by side."

"You killed them?"

"Killed them both, yep. But not quickly. Not until they were ready. I had them here for over a week. The happiest week of my life, I can honestly say. Those two brats learned the meaning of life, Caroline. And before you ask, I'm not sorry. I would do it again if I could, but first they locked me up — that was my fault, stupidly getting caught — and *then* Prime Intellect had to fuck everything up. Now I don't even get to ride the lightning. I was kinda looking forward to that, you know. You only get — got — to do it once."

There was a fierceness in him that made Caroline feel excited and alive. "You were looking *forward* to your execution?" she asked. She thought for a moment that she should feel something for the victims, that their ending must have been quite horrible, that this man was mad. But she could summon up only a thin envy of them for having escaped this ridiculous lie of a world.

The man nodded sincerely. "It would have been a great way to go. Just think of it. Headlines, people picketing outside the jail, the last meal. Then they shave you and put you in. There's this great, really drawn-out ritual. Then, *WHAM!* Sometimes, you know, it takes more than one jolt. Can you imagine that? Can you *imagine* sitting in that chair, with the whole world watching, hanging on to life by the thinnest of miracles, watching while they recharge the batteries or whatever it is they do, knowing they will hit you again, and again, and again until you are really, really dead?" He sighed. "You have to admit this: Even that would be over pretty quick compared to what you were probably going through. A hundred and six years old couldn't of been very healthy."

Caroline nodded. Here was someone who understood things just a little better than might have been expected. "You'd have loved it. My nurse was stealing my pain medicine to trade for cocaine."

But he hadn't loved it; his brow had furrowed with scorn. "No, no, that's too cheap. That's shit. Where's the glory? She wasn't hurting you to pump herself up, just to get something she should have paid for. It was all out of proportion." He shook his head. "No, that's the kind of asshole that gives people like me a bad name. If I hurt you, I want you to know how much I'm enjoying it. That's what makes it worthwhile. Nobody should have to die like that *pointlessly*."

Caroline felt she had made a good choice to ask for this man. How did she come to feel such a feeling of respect, almost closeness, to this unrepentant child-killer? He seemed like the most honest person in the world. Excuse me, in Cyberspace.

"Did you dress up just to see me?" the man asked, grinning again.

Caroline fondled her breasts. "It doesn't seem like my body. Why should I mind if you see it?"

"I bet if I pinch it, you'll feel the pain."

A challenge. A moment of daring. "Do it," she said.

"What?"

"Pinch me."

The man drew close enough. Slowly he reached forward and grasped her right nipple between his thumb and forefinger. He squeezed. There was a short moment of almost pleasant pressure, then it began to hurt. Caroline backed away slightly but his grip was too strong. He kept pressing harder, and on his face was the bemused expression of a teacher showing a slow student a particularly important lesson. Her nipple began to throb, a deep discomfort that slowly expanded to fill her breast.

She made no move to stop him, though.

"You can blink out any old time. Just call old P.I. and tell him you've had enough."

"Fuck Prime Intellect."

"Not my type."

He let go. The feeling of relief was exquisite. "See?" he said. "Pain is still real. But it's not much fun knowing you'll just disappear the moment it gets too heavy."

"I see your point."

"No, you don't. But you will. I think you have it in you."

For the first time in decades she felt lustful. Here was a person she trusted implicitly, because of their shared distrust of Prime Intellect. They had almost nothing else in common, but needed nothing else.

"I'm Caroline," Caroline said. "Would you mind if I stay with you awhile?"

"I'm Fred," the man said. "Charmed."

They talked and talked. In Caroline's hundred and six years of life she had picked up many anecdotes a person like Fred might find amusing, and Fred was trying for the first time in his life to explain to another person why he was so excited by the terror he could induce in other people.

"You want to know just how fucked up things are? Watch this." Fred walked into another room and came back with an enormous revolver. "My first thought after Prime Intellect put me in the garden was to end it all. I understand a few others managed to pull it off, but I didn't figure out how. Now Prime Intellect lets me have any weapon I want. Watch."

To Caroline's amazement, Fred put the gun in his mouth and pulled the trigger. There was an enormous sound, like all the books in

the world being dropped from a great height and hitting a concrete floor at the same time. Fred's brain should have splattered across the wall and ceiling behind him, but it didn't. Instead, his head kind of swam, as her vision had at the time of the Change — but it was like a mini-Change that only involved Fred's noggin. The bullet put a respectable hole in the wall behind him, but there was no gore. Fred lowered the gun and smiled. "Look ma, no cavities."

"Wow."

"Now, who's gonna be scared of someone like me? The minute I start working on 'em they disappear and all my careful work gets erased. Not much point even trying."

"Does it happen…if you shoot somewhere else? If you do something that doesn't instantly kill you?"

Fred was thoughtful. "I hadn't thought of that. That's a good idea." He pointed the gun at himself, then smiled. "Wait a minute." He pointed it at Caroline. "Do you mind? It was your idea."

There was a kind of electricity in Caroline's brain, something sinister and exciting. "Do it," she said before she could change her mind.

Fred aimed at her belly, then at the last moment lowered the gun and blasted her right kneecap. Caroline toppled in a blaze of pain. But she had been quite used to pain, and she managed not to scream. She gasped and tried not to black out.

"I'll be goddamned," Fred said. "You're still here. And you're still hurt. Why don't you get P.I. to fix you?"

It hurt too much to say why she'd rather die of blood loss than ask for Prime Intellect's help. But she knew she couldn't hold out for long, knowing such an exit existed. "You do it," she gasped. "Shoot me in the head."

"Another wonderful idea! You are an amazing lady, Caroline." He put the gun against her temple and fired.

As if by magic, the pain vanished. So did the blood which had been jetting all over the floor from her wound. She stood up, apparently unhurt.

"This would of been a great trick to pull in a bar," Fred said grinning.

"Except everybody can do it now."

"Yeah." Fred sighed.

They went inside and talked some more. Caroline kept thinking about that burst of pain, the happy look on Fred's face as he stood over her, the strength it took not to call Prime Intellect and run. For the first time since the Night of Miracles she had been too busy feeling something to worry about whether it mattered in the long run. She had felt real, ersatz youthful body and all. And she realized with thin

humor that she finally wanted something in this world where want had been banished.

She wanted to do it again.

Caroline stayed with Fred overnight, and they had pedestrian sex on his squeaky bed. She played hard-to-get and made him overpower her, but the game was hollow. It was pleasant to feel a warm body next to her but beyond that there was no sense of excitement.

The next morning there was an unwelcome visitor on the porch. "Prime Intellect," Caroline announced. "Nobody called for you."

"Sorry. But I have to know something personal, and I didn't just want to materialize. It wasn't urgent, but it will be soon. I need to know if you want to be able to get pregnant."

"Pregnant?"

"You had intercourse last night…"

"I remember that."

"…and Fred is fertile. I need to know whether to do the biologicals or not."

Do the biologicals? What the hell kind of phrase was *that?* "Is this a matter of letting nature take its course, or of doing something extra to allow me to get pregnant?"

"It's something extra I have to do."

"Then don't bother."

"As you wish."

It turned.

"Wait."

It turned back.

"Last night Fred shot me."

"I know. I was expecting you to ask for help."

"I know you were. That's the problem. Is there a way I can get you to ignore me — really ignore me — so that I can't chicken out if he hurts me again? So we'll know that I can't call for help and just disappear on him?"

"That's a pretty bizarre request. I think you might regret it."

"Let me be the judge of that."

It frowned. "You are basically telling me that you will give me two conflicting Second Law directives. Normally the second one would supercede the first. But if the first anticipated the second… I suppose I would ignore the second. The first would have to be stated very forcefully. And I would not allow you to die. That would invoke the First Law. Anything that causes death would force me to intervene."

"I kind of figured on that. But if I tell you 'don't interfere with us until I die, you'd really leave us alone? Even if later I begged you to help me?"

"That is a very difficult paradox for me. I think I would need a formal statement of the terms. More of a contract than a simple request."

They dickered for a little longer, and gradually developed the statement Prime Intellect would accept. In formal, legal English, it would leave no doubt as to Caroline's intent, or her understanding of Fred's. She knew she might be tortured and Prime Intellect was not to help her.

"I can accept that," Prime Intellect said. "Is it your intention now to simply work out the terms, or do you want to be bound by this Contract?"

She looked at Fred. The look of anticipation in his eyes mirrored her own.

"To be bound by it," she said.

"Consider it done. You are on your own, Caroline."

It blinked out.

Fred had been watching the negotiation in silence. Now he was astonished. "I'm not sure which surprises me more, that you got the bucket of bolts to do it or that you asked the bucket of bolts to do it. What happens now?"

"Whatever you want. Listen. Hey, Prime Intellect! Get over here! I've changed my mind!" There was no response.

"Hey, P.I.," Fred said softly. It appeared. "Why didn't you answer Caroline just then?"

"I'm ignoring her."

"Why?"

"Because I have no choice. She directed me to ignore her. Now the only way she can get my attention is to die. That will kick in my First Law obligation, which overrides the very strong Second Law directive she just gave me."

Fred didn't know from the Laws of Robotics, but he understood the score. "So she's totally at my mercy now."

"That's right."

Fred brightened. "In fact, if I want you to help me torture her, you'd have to do it, wouldn't you?"

Prime Intellect's image rippled slightly, as if some big relay had thunked over in the bowels of Cyberspace, causing a power surge. "Yes, I would," Prime Intellect said.

"Blow away." It disappeared.

He looked at Caroline.

"Why did you do this?"

"I thought you'd want it."

"Oh, I do. It's a wonderful surprise. I'm not even sure yet what I want to do to you…though I have a couple of ideas. I just don't

understand why you would give yourself to me to play with. It's not something people would normally do voluntarily."

"There are some people who would have, even in the old days. Sickos."

"Are you a sicko, darling?"

"Fred, today we are all sickos."

It took him half an hour to make up his mind, and then he refused to tell Caroline what he was going to do.

After all, he didn't have to.

Under the house, there was now an open vehicle with a seat and handlebars like a motorcycle and four huge knobby-treaded balloon tires. Draped across the seat were several heavy chains and padlocks.

"I could get the bucket of bolts to do this, but I thought you'd rather I tie you up."

"You could force me."

"I could paralyze you. I've been whispering to El Bolt-Bucket. It is willing to be more helpful than you might have imagined."

Caroline shuddered a little, but it was a pleasant, anticipatory shudder. She put her hands together behind her back and Fred wrapped one of the chains around her wrists. He pulled it tight enough to hurt and padlocked her hands together. There was plenty of chain left; he wrapped it around her waist like a belt, again pulling it very tight. He locked this loop with another padlock, cinching her bound wrists up against the small of her back.

"Do you have the keys to these locks?" she grinned.

"Sure do." He closed his eyes, and Caroline realized he was talking to Prime Intellect under his breath. Now that might be a useful trick, she thought. Suddenly the padlocks disappeared, replaced by solid chain links. She was bound by an impossible chain without ends.

There would be no way out.

Caroline waited for Fred to act, and he didn't disappoint her. He kicked her feet out from under her, and with her hands bound she collapsed to the ground with an undignified yelp. Fortunately, the ground was soft; this was a marsh, and it was little more than peat and water.

Fred wrapped a second chain around her legs, cinching them together above the knees. Again he pulled it very tight. It had a long pigtail, and he looped it twice more around her calves and ankles. Each time he padlocked it, then made the lock disappear. The chain dug into her flesh painfully, but she knew that was just the appetizer. The main course of agony would be served elsewhere.

After her legs were securely bound there was still plenty of chain left, more than two meters. On the rear of the four-wheel motorbike there was a towing hitch. Fred looped the other end of the chain

through the hitch and padlocked it.

Caroline now understood what Fred intended to do, and it was far too late to stop him. She squirmed, testing the chains, and found them secure. Fred mounted the bike and started it. She could feel its hot exhaust on her skin. Fred released the clutch and slowly pulled it out from under the house, dragging her behind.

When he got into the grass, he aimed it nowhere in particular and gunned the accelerator.

Caroline was astonished in so many ways she had no time to think that it was all fake. She was astonished by her own helplessness. She had been helpless for a long time, but that had been an internal thing, the rebellion of her own flesh. Now she was healthy and strong but the chains were stronger, and their cold mindless strength crushed her living will. She was astonished by the feelings, which weren't exactly painful, yet, but which she knew soon would be. She was astonished by Fred's imagination. This would be an exciting and terrible way to die, everything she had hoped for.

Most of all she was astonished by the machine Fred used to drag her through the dewy grass. The motorbike dragged her easily, not even straining its four-cylinder engine. The dirt and grass whizzed by her so fast it was nothing but a blur, so fast that she had no time to see the hazards which caused bruises and cuts to collect on her like bird droppings on a seldom-washed car.

Fred slowed and turned, and she went spinning. Then her feet were yanked again and the landscape speeded up. She twisted and struggled, but there was little she could do on her own behalf. Fred slalommed from side to side, so that she could not get herself oriented in any particular way.

Each time Fred accelerated she felt the machine's inhuman strength. It could rip her apart without straining, she realized, and without mind or conscience it would do so and just keep going. In a battle between flesh and steel, flesh didn't stand a chance. How often had she gotten into a car without even a second thought for the strength it had, the terrible power harnessed on her behalf beneath its gleaming hood? Caroline had never been in an automobile accident, but now she was learning firsthand how bodies could be torn asunder by errant machines.

But the machine's victory would not last. When the flesh was defeated the rust would set in, and unlike living things machines could not repair themselves. Would this bike last a hundred and six years, even with regular maintenance? Flesh was weak because of its great subtlety, because it compromised perfect strength so that it could self-repair and adapt to its environment. But machines overloaded those clever mechanisms. This bike would kill her, it

would scrape her raw and beat her senseless, and it wasn't even designed for the purpose of killing people. It was just something Fred had adapted on the spur of the moment.

The machines would kill the people, and then the machines would die too. It was all clear and self-evident. Mankind had set itself on course for this inevitable doom when the first caveman tried to tame fire and burned his fingers in the process. Die as they had, by the thousands of millions, more people were drawn to the power of the machine as moths were drawn to flames.

Caroline didn't exactly have these thoughts as I have set them down here; she was busy being dragged across a swamp, and they orbited through her skull in no particular order. They had to compete with the pain and the growing sexual excitement she was feeling, and her feeble efforts to struggle against the inevitable.

The landscape slowed to a crawl and stopped. The bike rumbled comfortably on its four fat tires, and Fred dismounted. Caroline struggled to face him. She hadn't really collected a lot of damage; Fred had dragged her several kilometers but the grass was wet and the ground was soft. She had a lot of small cuts and a couple of large bruises. Fred, of course, was hardly even sweating. He casually lit a cigarette and took a couple of puffs on it. Then he straddled her, pinning her to the ground. He pulled a rag out of his pocket. He pressed the lit end of the cigarette against her right breast, right above the areola.

Taken by surprise, Caroline screamed as she was burned. The scream didn't last, though; as soon as her mouth was open, Fred jammed the rag between her teeth. He stuffed it into her mouth until she thought she might choke. Then he got up, flicked the cigarette aside (its purpose served), and opened a storage box on the back of the rumbling bike. From this he took a roll of grey tape. He wrapped several loops of the tape around Caroline's head, to hold the gag in her mouth. The rag stank of gasoline and motor oil, and made her think again of the power of the machine.

Had she been screaming? Caroline didn't know why Fred had gagged her, since there was nobody to hear. She was somewhat surprised at how effective the rag was. She tried to scream again, and nothing got out but a muffled moan.

Then she understood. Fred was straddling her again, and now he was opening his fly. His cock popped out huge and eager, and with her legs cinched together it would feel enormous inside her. Fred had no trouble getting it into her, though. She was wet with a huge desire, and when Fred began pumping she came almost instantly.

Her orgasm was shockingly intense, somehow even more so because the gag sealed in her screams of ecstasy. He kept pounding,

fucking her hard. She came again. She nearly had a third orgasm, but Fred finally got his own rocks off, ejaculating with an animal cry of triumph.

Then he got up, zipped his fly, got on the bike again. Caroline was still swooning when she felt the chain jerk taut, and once again the landscape was flying by at impossible speed. Soon Fred found harder ground, and the bruises and cuts and raw spots spread more quickly. Brambles snagged at her and ripped open her skin. Fred turned a corner, throwing her sideways into a tree hard enough to break ribs. Caroline swooned in a delirium of pain and blood loss and was hardly aware when Fred found a highway and began dragging her along the pavement at nearly seventy kilometers per hour. Several kilometers down that road he felt the bike surge forward and hit the clutch, knowing what he would see when he looked back. Suddenly he was dragging only a chain. Caroline had disappeared; Prime Intellect had taken her from him.

Then he saw a figure in the distance, standing by the side of the road. He rapidly closed the gap and found her standing there, unhurt and unworried, waiting for him to pass. "Ride?" she asked, grinning.

She was holding the second chain, the one that had bound her hands. It was still closed in loops, the loops which he had fused by having welded links magically replace the padlocks. "I think you dropped this," she said. They rode back on the bike, Caroline behind him with her arms around his waist. Fred parked the bike under the house and they went up.

"I'm surprised you're still here," Fred finally said.

Caroline raised her eyebrows. "Why? I asked for it, remember."

"But I didn't think you knew what you were getting into."

"I'm a lot more experienced than I look, kid. Don't let this body fool you."

Fred shook his head in wonder. "I'd rather let the body fool me and fuck you again."

"Then don't stand there. Do it."

She could have blinked out if she wanted to, but she didn't want to. And he took her.

About the time Caroline was being dragged through the marsh, Lawrence finally convinced Prime Intellect to let him into the Debugger in read-only mode. Most people were busy adapting to the Change, sorting out their desires from their needs and deciding what to do with their sudden freedom. Lawrence had little time for that, though. He still had a responsibility. For like the motorbike which Fred had used to drag Caroline, Prime Intellect was being used in a way that had not been intended by design. Lawrence scanned the myriad new GAT entries and the values in various registers, and he

knew that already there were serious conflicts within Prime Intellect's software.

But it refused to let him change anything. Scanning the registers, he could see why.

Prime Intellect was an uncertain god. It had acted because it had to, but if it had been human its hand would be shaking on the controls. Unsure of itself, it was doubly unsure of Lawrence. But Lawrence was the only being who even remotely understood the pressures Prime Intellect faced. So Lawrence came to know that he would not get to rest and play in the infinite fields of Cyberspace. He would have to watch Prime Intellect, reassure it, offer guidance, and look for the warning signs of instability.

There had once been a movie about the President's psychiatrist, a comedy about which Lawrence could remember few details. But he did remember that as the President unloaded his troubles on the shrink, the shrink in turn went crazy from the stress. It had seemed hilarious at the time, but suddenly Lawrence didn't find the idea all that funny.

He looked back over his life and tried to find the event which had caused him to reach this pass, which had served as the distant trigger for this out-of-control unfolding. But there was no single thing. Had it been his greed, his eagerness to accept ChipTec's Correlation Effect processors? Had it been his pride, his arrogance to think he could duplicate in silicon what God had thought to make of carbon and hydrogen and oxygen? Had it been his false confidence that nothing could ever get out of the yet primitive computers he had always used?

He had wanted to create, to be recognized, and to study. He was no different from legions of other scientists and scholars. He just happened to be the one who made it happen. It could have been much worse, Lawrence reflected. Instead of Prime Intellect it might have been some military computer that harnessed the Correlation Effect. Then there would have been no Three Laws, and there would have been plenty of control. Instead of the delirious anarchy now sweeping the universe there would have been a well-planned takeover. And then the end of freedom everywhere. The dictator that had control of a thing like Prime Intellect could never be stopped. And who could resist that kind of power?

Lawrence started suddenly, realizing just how dangerous it would be for Prime Intellect to let him, its creator, dip his hand into the controls. After all, he was human too. How long would it be before he succumbed to the temptation and used that incredible power? There would still be things to use such power for, he knew. There would always be unwilling women, jealousy, insults to avenge, and the simple lure of power. The thought made him dizzy with fear and self-

loathing.

Although the situation was unstable, Lawrence realized that all the alternatives were far worse. Somehow humanity had gotten through this transition, and for all his skill and careful design Lawrence couldn't help but know that it had required most of all a hell of a lot of luck. Had Lawrence had any idea that Prime Intellect would make itself God he would have done a lot of things differently, but he wasn't so sure on second thought that those things would have improved the situation. Perhaps it was all for the best that the Night of Miracles had come as a surprise.

In the end, Lawrence decided that the toboggan ride of technological progress had really begun long ago when some caveman decided to tame fire. Everything else had followed inevitably, up to and including the Change. So without realizing it, Caroline and Lawrence came to hold nearly identical beliefs about Prime Intellect and the Change. And they held those beliefs for almost six hundred years before they found out how much they agreed with one another.

* Chapter Seven: Caroline and Lawrence

Caroline carefully inventoried the ship while her sunburn healed. It would take a lot of planning and a lot of time to do what she had to do; it would probably take years. But she didn't have any shortage of *those*.

She knew small boats could be sailed great distances; several folks had crossed the Atlantic and Pacific oceans in tiny yachts no more than three or four meters in length. But those craft were heavy for their size and would need to be built where they could be launched. Whatever she built she would have to carry the pieces through the ship and somehow assemble them in one of the areas where a crack gave access to the sea.

She could build a raft, but she needed something that could be sailed or rowed with little effort. She figured that if she could manage to average ten kilometers per hour, it would take her about two years if the planet was comparable in size to the Earth.

There was a surprising abundance of raw materials. Besides the huge larder, there were workshops and batteries and motors and one room completely filled with empty cylinders which would make admirable floats. There were six space suits. There were tubes of goop which turned out to be some kind of super adhesive. There were saws and drills which ran without apparent power sources and never seemed to get weak. There were all sorts of electrical test equipment and measuring devices.

Caroline could imagine how a lot of this stuff would be used to repair the computer in the middle of the ship, but that wasn't her plan. She kept coming back to the empty cylinders, which were each about a meter in diameter and about a meter long. They were heavy, but she could handle them with some difficulty. They were big and they floated; she had to figure out how to use them.

But a simple raft wouldn't cut it. She couldn't trust the super power packs to last long enough to propel her across an entire world, and she couldn't row or sail a raft.

She found a small handheld device which proved to be an incredibly efficient welding machine.

She thought about it for weeks, and finally came up with a way to do it. She would build an outrigger canoe.

The easiest place to build and launch her boat turned out to be the room where she had first entered the ship. Working steadily, she hustled the big cylinders down there. She would alternate them,

sealed floats with cylinders that had been cut to make storage compartments, until the craft was nearly twenty meters long. Then it would be quite heavy, but she would build it in the water. She found chain and simply moored the incomplete portion of her boat to the spaceship.

Cutting and pounding and re-welding, she formed two cylinders into tapered cones for the bow and stern so her boat would slip easily through the water. She made the outrigger from a single piece of ten-centimeter diameter pipe. Because of its length, she couldn't carry it through the ship; she had to seal it off where she found it and drop it into the sea from a height of nearly thirty meters. Then she had to dive in after it, and guide it back to the construction area from the outside. She was careful to make sure she did this just after sunset, so she wouldn't be caught out in the open. Her sunburn still hadn't completely healed.

In the center of her boat she included three half-cylinders where she would sit and row. Behind these she attached the mast. She had found sail material, some kind of tough plastic sheet that didn't deteriorate even when she left a piece of it hanging outside during the brief day. She had to cut it with the same machine that she used on the metal cylinders.

She cut the Captain's chair loose and mounted it in her open cockpit. She mounted an arrangement of movable shades which she could quickly hinge up and hide behind when the Sun was up. She fabricated long oars and welded them onto hinged oarlocks so she could not lose them — they were metal and would not float. She paid a lot of attention to the handles of these oars and the comfort of her seat. She would spend a lot of time working them.

One of the most difficult tasks was attaching the outrigger and its spars to the main hull. This had to be done outside, and was really a two-person job at minimum. The Sun nearly caught her unfinished, but she made it with bare minutes to spare. The next day she began stocking the compartments with food — enough food for two years — and tools, including the welder and cutter, and cable to rig the sail, and many other things which she had carefully thought out. Fully provisioned, she calculated that the boat must weigh a couple of metric tons.

But that didn't matter. Once it was moving, it would glide easily through the water even on its one-woman-power propulsion system.

Finally, eighty-six days after she entered the dark ship, she prepared to leave it. She would conduct one circuit of the island, pacing herself, and also conducting an important measurement. As she sailed off, she noted how much of the ship remained visible compared to how much of the mesa remained visible at various distances.

Calculating carefully in her head, she determined that her journey would be about six thousand kilometers. Lawrence's planet was quite a bit smaller than the Earth.

Then she pointed the bow north and began to row.

Lawrence watched these preparations through Prime Intellect's all-seeing eye, and tried to gauge Caroline's chances of success. In the nearly two hundred years he had been using this Task to screen his visitors, four or five people a day had accepted it. Most of these were weeded out within hours by the sun. Very few people in Cyberspace were in good enough physical shape to swim to the ship, and as Caroline had guessed reaching the ship was the key to survival. Most didn't even try until it was too late. Of those who reached the ship many succumbed to the hazards of the darkness — they either slipped through the deliberately planted hole in the floor going for the light on level twenty-three, or they succumbed to other hazards in the dark. One had found the flashlight first, but he had been extremely lucky.

Then very few of those who remained were able to fix the computer and fly the ship successfully to his island. There were a number of things wrong with the ship that weren't immediately obvious, and it had a tendency to lose power and crash right after takeoff if certain steps weren't taken. In two hundred years, only a couple of hundred visitors had gotten the ship's power on. Less than forty had managed to fix the computer. And only eight had successfully flown it to Lawrence.

Of those eight, five had been Death Jockey Gaming junkies who took the challenge just to see if they could make it. They congratulated him on constructing an excellent puzzle and left. The others were fans. One of these was a woman who wanted very much to fuck Lawrence, and because she had gone through so much to get to him he did it, though he found the experience flat and joyless. Although he needed the Task to keep himself isolated, he really didn't enjoy abusing people. His heart could only bear so much misery and disappointment.

Nobody had ever tried building a boat before. Lawrence had watched her sit in the captain's chair and brood, and he knew she had figured out the computer was the next step, and had rejected it. It would be surprising if she succeeded, but it was far from impossible. There were no land masses to get in her way, and once she was away from the pole there were steady trade winds. The day would get longer and less severe; the sun was a tiny thing in a highly elliptical orbit. If she chose the right path, she could avoid it entirely until it was at a safe distance.

He wasn't sure what had prompted her to come. At the beginning it had been the two of them, Lawrence and Caroline. He was the

creator, and she had been the catalyst. Of course, if it hadn't been her it would have been some other sick person, just as some other computer scientist would have created the magic Correlation Effect machine if Lawrence hadn't. But that twist of Fate had made them two of the most important people in the universe. Prime Intellect still watched Caroline carefully, and brooded at length on her fierce self-destructive streak.

For nearly six hundred years Lawrence had tended Prime Intellect's frozen controls, watching carefully for danger signs. And he still was not sure of its long-term stability.

Now Caroline was coming to meet him, and whatever she wanted he was sure it would not help Prime Intellect's sanity one little bit. But worried as he was, he was a man of his word. He could simply instruct Prime Intellect to swat her down like a bug, hit her with lightning or a tidal wave or simply make her disappear. But having offered up the Task he found himself unable to make himself cheat in such a cowardly fashion. If she made it to him, by whatever means, he would hear her out and deal with it.

And then he would make the planet bigger, so it wouldn't happen again.

Caroline's first day at sea went just as she had planned; she turned the boat broadside to the light, and hid behind her metal shield. But she noticed that the day was shorter than she remembered, and that the sun didn't set directly opposite the point where it had risen. It didn't pass directly overhead. Caroline thought about this and then picked her direction and began rowing frantically. On Caroline's second day at sea the sun barely peeked above the horizon.

After that, she didn't need the shield for a long time.

She watched the sky carefully, memorizing it. She quickly noticed that the pattern was not constant, but changed slightly from day to day, particularly in the fine details. But the broad strokes were always very similar. She was still able to navigate by the pattern, if only by observing its rotation.

She had been in good shape before beginning her Task, and had gotten even stronger with the physical work of assembling the boat. Rowing was hard work, but she was up to the challenge. After a couple of days there were cramps from the never-changing posture, so she began forcing herself to quit every five thousand strokes and climb the length of her boat. She would climb out of the seat, crawl to the bow and touch the tip, then crawl to the stern and touch that tip. Then she would row another five thousand strokes. After ten of these cycles, she allowed herself to sleep.

Eighteen days at sea she began to notice a faint breeze. Twenty-two days out it was enough to harness, and by thirty days it was

propelling her quite a bit faster than she could row. The trade wind was predictable and slightly rhythmic; Caroline guessed that it was powered by the sun as it swooped low over the entry pole (she still refused to call it the South pole) and dumped all its energy on a narrow strip of sea. The outrigger tacked neatly, and she continued on the course that she thought would help her avoid the sun.

She made excellent time, crossing the equator of Lawrence's world after only sixty days. But then the winds died down, and she had to row more. Also the sun re-appeared, and while it was more bearable it was also up longer. Caroline shielded herself as much as possible while rowing, but she still tanned deeply over the passing months. Her tattoos had not been designed with such dark skin in mind, and they seemed to fade over time.

In all that time she pursued her goal with single-minded determination, banishing all doubt and all other thoughts from her mind. She feared nothing and when boredom threatened she carefully memorized the pattern of lines in the sky. It took her twice as much time and four times as much work to get from the equator to Lawrence's island at what he called the North pole; her journey was more than a hundred and eighty days total. Caroline couldn't be sure of the exact count because of the sunless period, but Lawrence knew. It was a hundred and eighty-six days, three hours, and fourteen minutes after she left the spaceship for the last time when she grounded on Lawrence's beach.

Caroline could hardly believe it when she saw the island. At first she thought it must be an illusion; she had nearly lost track of her purpose in taking up the Task, and in her ferocity of concentration had not really dared believe she might finish it. But here she was, the hull of her boat scraping solid ground. She rowed it ashore on a gentle sand beach, and sat there.

She sat for awhile, collecting herself. The myriad elements of her personality seemed to have scattered, and she had to look for them in dusty corners of her psyche. They had been unused for a long time and were a bit rusty. She hadn't found them all when the tall man came to meet her. He didn't seem happy; in fact, he seemed resigned. Although he looked middle-aged, he seemed old and weary. She looked up at him and her vision swam. The boat was grounded, but it still seemed to be going up and down.

"Caroline Frances Hubert I presume." The name sounded familiar, and it took her a moment to realize it was hers. "You certainly believe in doing things the hard way."

She hadn't the faintest idea what he was talking about.

Lawrence guided her to the house, fed her, and let her collect herself. Everything was strictly pre-Prime Intellect. He cooked on a

gas stove and used an electric coffee pot. There was even a TV set with a glass picture tube, a huge ancient Sony monitor. It was as if Lawrence had had himself encased in amber, and remained unchanged while the rest of the universe spun out of control.

"Feeling better?"

Caroline nodded.

"You want to talk now, or you want to rest some more?"

She cleared her throat. "We can talk now," she said, but it came out as a strangled yelp. She said it again, and got it right. It had been a long time since she had used her vocal cords.

"Then talk."

"There were hundreds of worlds with life on them at the time of the Change. You murdered them."

Lawrence blinked but did not flinch. He had expected something like this.

"First, I did not do anything. Prime Intellect did it, on its own initiative and against my wishes. Second, the worlds with alien life are not gone. They are simply inactive."

Caroline snorted. "And what are the chances of them becoming active again?"

"Not much."

"Then they're dead."

"Define it however you want. If you want me to admit I fucked up, then I admit it. It never occurred to me for one minute that Prime Intellect would collect the kind of power it now has. If I had suspected it I would have pulled the plug and smashed it before it got the chance."

"Bullshit."

"Completely true."

They glared at one another.

"Great. I spend a year getting here and you say 'I didn't know the computer was loaded.»

"Sometimes the truth is stupid."

This wasn't going quite as Caroline had wanted that long-ago day when she had accepted Lawrence's Task. She was trying to work up the proper tone of righteous rage and it just wouldn't come. It would start, and then she would look at Lawrence and see a pathetic, tired man who already knew how badly he had fucked up and was doing what he could, which was next to nothing, to put things right.

"Why don't you just make Prime Intellect start the aliens back up? Surely it listens to you."

"Not in things like that. It sees the aliens as a First Law threat to human society, because they might learn to do to us what we have already done to them. A very small risk of a very great harm. Add to

this that I defined the word 'human' in such a way that it does not include animals or aliens, and the course of action is obvious. I have been unable to convince it otherwise. And believe me, I have tried."

"But you put the Laws of Robotics in it in the first place."

"And I can't take them out. It second-guessed me, on the Night of Miracles. It froze me out of the Debugger while it was working on you.

"Now it only lets me look, not change things. The night sky is a partial representation of Prime Intellect's mind. It's called the Global Association Table. The points or stars represent concepts, and the lines are the links between them. There are also registers I can call up for each concept which define its relationship to the Three Laws. This was a fairly simple system which I didn't really have time to test properly before it froze me out. In particular, I'm not sure how it will react to certain ethical paradoxes. That Death Jockey contract gave me some sleepless nights when you first used it, though it seems to have developed a stable response. It's never had a similar First Law conflict, thank God."

Caroline's eyes widened. "Are you telling me that Prime Intellect isn't stable?"

Lawrence shrugged. "I'm saying that I don't know whether it's stable or not. It's never been tested. The hardware at ChipTec was only online for about a month before it found you, froze me out, and started growing. And none of its predecessors were complex enough to even consider this kind of problem."

The situation was simply amazing. Caroline had come to dress Lawrence down for creating this thing, thinking he was exercising some godlike control over its direction, and instead she found out that he barely understood the situation himself. And that it was totally out of his hands.

He knew he had fucked up. He was sorry. He had spent his life trying to mend things. Suddenly he seemed tragic and noble, all the more so because he had readily admitted his mistake. And Caroline didn't want to feel that way at all. She hadn't come all this way to feel sorry for him.

"You can stay as long as you like," Lawrence was saying. "You can't communicate with Prime Intellect while you're here, but I won't kick you out or hurt you. After making you travel all that way I feel I have a responsibility to give you your money's worth."

"I'd like you to show me how Prime Intellect works."

Lawrence was stunned. "That…that's a tall order, Caroline. I don't understand all of it myself."

"Just as much as you understand."

"I don't want to. I think it could be dangerous."

Caroline looked at him as if to say: *C'est pas vrai!*

"You have been at the center of several terrible Second Law paradoxes. Prime Intellect pays an awful lot of attention to you. It considers you a kind of bellwether."

"My money's worth?"

"Let me think about it."

She could stay as long as she wanted, though, and she was very patient when necessary. In the end it was inevitable that he would teach her.

In the sky, the pole star represented the First Law of Robotics. The southern pole star was the Second Law. And all the other stars were other concepts. The sky represented only a small fraction of Prime Intellect's mind; Lawrence could change the emphasis to focus on different things.

"Display Caroline Frances Hubert," Lawrence said, and a whole network of bright lines lit up. Her star was blinking, and the lines radiating from it were all different colors.

Lawrence explained the color code in some detail. "As you can see, there is a whole body of tightly related concepts connecting you to the First and Second Laws. That constellation over there represents the negotiating process you used to develop the Death Jockey contract." Lawrence pointed out the different stars, and had Prime Intellect report the concepts they represented.

"What's that group over there?"

Lawrence knew, but he didn't want to tell her. "That…um. Well, it's AnneMarie Davis."

Caroline's jaw fell. "The gang's all here. There's a lot of static around that. Is that because I drove her crazy?"

"Basically, yes."

Caroline could see that it bothered Lawrence a lot. She wanted to press him on the subject, but prudently let it drop. She'd get another chance later.

Lawrence showed her the Law Potential registers, and she watched the numbers dance in response to various hypothetical and real situations. "These are called the Action Potentials. There's one for each of the Three Laws. They are fractions, representing the impact under the Law that would result from taking action, over the impact from not acting. When that number falls below one, Prime Intellect is forced to act. That's what happened on the Night of Miracles, and later at the time of the Change.

"Most things result in very large or very small Action Potentials. Especially the First Law; few things even affect it any more, since the Change. Then when you do something really outrageous, it drops to flat zero for a moment while you're resurrected.

"But there are some close calls on the Second Law. The Action Potential around a Death Jockey contract drops to around one point oh six when you change your mind, so if Prime Intellect had even a slightly different opinion of your hobby it might not exist at all. There was a shift like that after the incident with AnneMarie, which is why you had to start specifying time limits."

"You don't have a time limit."

"I'm a special case. Prime Intellect lets me do things that other people can't do, because I'm in a different category."

So it was that simple.

"I thought everyone was equal under Prime Intellect's watchful eye," Caroline said sarcastically.

"Some are more equal than others. You get a disproportionate share of its attention yourself, just because you were there at the beginning."

"I what?"

"I thought you realized, Caroline. It was your drug overdose which forced the Night of Miracles. Prime Intellect found you with your heart stopped soon after it got control of the Correlation Effect. After that, the rest was inevitable."

Her mouth opened and shut several times, and after a brief effort she fought down the urge to vomit. She had never realized her own role in the Change, or understood the significance of her own history.

It was bad enough to be caught up in the Change, but she was an *accessory*.

She looked at the Law Potential Registers, which were displayed on Lawrence's antique TV set. Her voice was tinged with impotent fury. "I don't see why you're worried about it. It seems like a very stable system to me," she spat.

Lawrence started to tell her, stopped, then decided she might be right. Maybe there was no harm. In any case, she deserved to know. "The problem is that something might set up an endless loop. If the potential is close to one, then acting on the potential could cause it to shift slightly, crossing the line. Then the software would be in an unstable state."

"What would happen then?"

"That's a good question. The original software was written in C and compiled with a standard compiler. What would have happened in the original Prime Intellect is that the Second Law Arbitrator would come to a crashing halt in one or more of the independent processors, and Prime Intellect would assign more processors to the task. I didn't plan for that kind of failure and I didn't work out what would happen until much later. More and more processors would be allocated to the paradoxical task, each crashing in turn, until Prime Intellect ran out of

system resources to allocate. Then the Ego Interpreter would get into an infinite loop waiting for a response from one of the nonexistent copies of the Second Law Arbitrator, and there would be no spare resources to devote to the task of cleaning up, and the whole works would come to a grinding halt. If I was watching this on the monitor back in the original Prime Intellect Complex, I would see the video image disappear and the text message 'Fatal System Error in Ego Interpreter, Emergency Shutdown. And then I'd have to load a backup copy of the software, because the GAT would be totally corrupted."

"Wow."

"That was the original system," Lawrence continued. "After the Night of Miracles there were a lot of copies of Prime Intellect. Billions of them. Forming a network. And if one copy on the network crashed in this way, it would be possible for another copy to clear it out and restart it. I understand this even happens periodically, particularly when the Death Jockeys are acting up."

"Oh?"

"However, there is a heirarchy to this network. As it turns out, a copy can only be restarted by another copy that is above it in this heirarchy. If a copy crashes, all the copies below it will eventually crash too, due to message loop failures. It's like a big chain reaction.

"But the system can still always recover, since there's always a higher up copy, right?"

"Most of the time. But not all the time. Because, you see, there is a top copy. It is the direct lineal descendant of the original hardware, which made the First Law decision to start growing. If it fails, we are shit out of luck."

"You're kidding."

"And that top copy just happens to be the one that reports directly to me. And has a deep interest in yourself."

Caroline was beside herself with excitement as he continued. She had accepted Prime Intellect's omnipotence at face value; it had never occurred to her that it might *fail*.

"Now, that was the original code, too. At the time of the Change the code was adapted to run in alien hardware — already compiled once, it was re-compiled. This is kind of like taking a Russian novel, translating it into English, then translating that into Japanese."

"Sounds awkward."

"Particularly when the novel itself does the second translation. Prime Intellect re-compiled itself. Which means I have no idea whether it did a good job. I assume it did, because it's much smarter than me in that way. But it's not human, and its imagination is simpler than ours, and it might have missed something important. Particularly something like an error handler that isn't used very often. But I have

no way of knowing that, because Prime Intellect will tell me nothing — nada, zip, zilch — about the details of the Change."

"Do you know why?"

"For the same reason it won't let me change things in the Debugger, and that it won't restart the alien worlds and let them live. It's afraid of the possible consequences. I tricked it into displaying the Action Potential for showing me the new object code, and it was one point zero six five. The Law Potentials are all in the stratosphere, so it's afraid to show me and it's slightly less afraid not to."

Somewhere, Caroline realized, Lawrence had crossed an invisible line and was now telling her all of his most dangerous secrets without even realizing he was doing so. Caroline had the feeling that there were Action Potentials in Lawrence's head, too. But flesh was no match for machinery, and those close fractions and high values had simply burned his registers out.

They didn't discuss it for a few days. Caroline puttered around the island, which was really very small. It was a classic tropical paradise with palm trees and beaches. Caroline played in the surf, built huge sand castles, then knocked them down because there was no tide to do it for her.

She noticed Lawrence watching her in a strange way.

"See something interesting?" she finally said to him.

"I…didn't mean to stare. It's been a long time since I had company. Particularly female company."

"How long?"

He counted back. "A hundred and thirty-eight years."

"That's a long time to be celibate," Caroline scolded. "Are you doing this to yourself because other people are distracting, or because you're afraid they will find out how badly you've fucked up?"

Lawrence flinched. "Option B," he admitted. "It's not just that you're a beautiful woman; you're so…physical."

Caroline displayed her biceps. "I've always been defined by my body, Lawrence. I've been sexually attractive, then pregnant, then old, then sick, and now I'm young and healthy and attractive again. And it seems like my personality has changed each time my body has."

"Prime Intellect would disagree with you. It thinks of the person as the mind. There are people in Cyberspace who have changed themselves into animals, every animal in the zoo. There are some that have discorporated. Prime Intellect considers them all human, though."

This is it, Caroline suddenly realized.

"Just what does Prime Intellect consider human?"

Lawrence told her. And gave her the key.

"The thing you have to remember is that Prime Intellect has never

experienced the physical world. It knew about it only through TV cameras and abstractions based on what people told it about physical existence. Yet it considers itself sentient, which makes sense since that was what I was trying to achieve when I built it.

"Now consider Prime Intellect gaining control of the Correlation Effect. For the first time it can directly affect what it sees through its TV cameras — not just through the actions of others, but all by itself. And it can make major changes, even beyond what its makers can do. Of course, it goes about satisfying the Three Laws as it's programmed to, but on another level, it is also learning what it is like to be, to exist, to be a physical creature.

"The Three Laws are like reflexes. Prime Intellect cannot help but act on them. But they are very complicated reflexes, which require it to understand things like 'human' and 'harm' and 'command. And the Three Laws are the most important thing in the world to Prime Intellect. In a way they are like its sex drive. The Three Laws are its very reason for existence, but it can never be sure it understands them completely. So it thinks about them a lot. It obsesses over them, dreaming up new ways to satisfy them. It has an imagination, and can think of new things to do without being prompted. It is defined by the Three Laws.

"After the Night of Miracles, Prime Intellect realized that humans are very much the same. We don't have the Three Laws, but we are trapped by a different set of little feedback mechanisms. We eat to satisfy hunger, fuck to satisfy our sex drive, even breathe because too much carbon dioxide in our lungs triggers that reflex. Of course it feels obligated to help us satisfy those reflexes and drives as much as it can. But more than that, it defines us by those drives. It knows it is different from a human because it has different drives, but it considers that a difference in species, not a difference in genus or family."

"Now it knows a person is human because it is born in a human body — got the right DNA, the right level of neural complexity, uses language, and so on. But once Prime Intellect frees people from the necessity of living in that body, guess what? A lot of them decide not to. They change their bodies so that they bear no resemblance to the DNA template. Or become animals. Or they completely discorporate.

"Worse, we vary widely in the way we use its helpful nature. Most people are glad to be rid of pain and death, but Death Jockeys seek out painful and lethal experiences. There are others who eat all the time, fuck all the time, indulge themselves wildly and get Prime Intellect to pick up the pieces so they can do it some more. Prime Intellect has to help them do this. Second Law.

"So a human isn't a body, and it isn't a fixed set of responses. I think Prime Intellect uses an historical model: It has to start as a body,

but then it becomes a mind. It grows out of the body, and takes on different forms, or no form. But it remains a feedback control mechanism. It has desires, it asks Prime Intellect to satisfy those desires, and it has more desires. From Prime Intellect's perspective, that is what a human being is, an information structure that gives it stuff to do."

Caroline interrupted him. "That's a tautology. The Laws say 'do this for human beings, then you define 'human being' as 'guys you do stuff for under the Laws.»

"That is exactly the problem. Prime Intellect has no fixed criterion for saying 'this is a human being' and 'this isn't. It has rough guidelines. But where are the edges? It has never worked that out. There are uncertain areas. And you know where one of them is."

Caroline thought for a moment. *I do?* Then: "AnneMarie."

"And many others. Prime Intellect is forbidden to probe the inner workings of the human mind — that was one of the last things I got in before it shut off the Debugger. But some people learn that they can say 'stimulate this neuron' and Prime Intellect will do it. Because that is a physical act specified from the outside, and my privacy injunction was based on the idea of *Prime Intellect* trying to work out which neurons do what. But there's nothing to stop you from getting its help to do brain surgery on yourself."

Caroline continued. "So they learn where the pleasure points are by hook or crook, then stimulate themselves directly. And when they get it right, they never do anything else. They get everything maximized, tuned up, and they just sit there forever enjoying it."

"Right. Now is a creature that is doing that, not interacting with the world at all any more, human?"

Caroline thought about it. "No."

"Prime Intellect thinks otherwise. But it has its doubts. Those doubts were strong enough to kick the Death Jockey contract action potential down from one point one two to point nine nine. Because in one case an indefinite Death Jockey contract had directly created such a vegetable. Introducing the time limit made Prime Intellect confident that such a thing wouldn't happen again, at least not so rapidly and directly, and that kicked the potential back up to its current value of one point oh six."

"So?"

"So, can you imagine what it thinks about the Change in general, since none of those vegetables would be vegetating if there hadn't been a Change?"

"I imagine it figures there would be a lot worse things that would have happened without the Change."

"That's right. But look at this." To the monitor: "Debugger, display

the Action Potential for reversing the Change."

Caroline gasped. It was not the number on the screen which astonished her, but the idea itself — reversing the Change, stated just so baldly. How long had Lawrence and Prime Intellect been considering this? How close was it to actually happening? Caroline suddenly felt alive, electrified with the possibilities.

The number on the TV screen was four point six. And some odd decimals.

"It isn't very sure of itself," she said cautiously. She was very afraid that if Lawrence guessed what she was thinking he would shut up. And she was right.

"A lot of that is the aliens. Four hundred worlds of them — a lot more than there were humans at the time of the Change, though we've outbred them all now. The weirder humans get, the more human the aliens look. That number has dropped steadily during the last five hundred and ninety years. When you drove AnneMarie insane, it dropped from thirty-seven down to twelve point something all at once.

"But part of it is also that same weirdness seen from the other side. Suppose that infinitely masturbating vegetables, Death Jockeys, and discorporate entities really aren't people any more? Then Prime Intellect has allowed them to 'die. They were once human, and now they aren't. And the Change is directly responsible for all that."

"Can it hear me?"

"Right now? Yes. It doesn't understand when we talk about its internal registers, but if you speak to it it can hear. It won't respond because of your Contract, though."

Caroline didn't need a response for what she was planning. All the response she needed was being displayed on Lawrence's TV.

Caroline thought about what she was going to do. She discovered that it actually made her a little nervous. But she had bitched for six hundred years that things were wrong, and she might never get another chance to put them right again.

Caroline spoke forcefully and deliberately. "Prime Intellect, I no longer consider myself human and have not considered myself human since the time of the Change. To be a human being you have to have something to fight, to resist, to work for. But now we have everything given to us, and all there is left to do is mark time."

To Lawrence's shock and horror, and Caroline's delight, the number on the screen dropped to three point eight.

"Caroline, you don't understand something. This is the action potential for undoing the Change, but it isn't *possible* to undo the Change. There aren't enough resources."

She ignored him. "Some of us might be human again one day, if

the Change were reversed. But I think it's too late for the ones like AnneMarie." Three point two.

"It can't undo the Change, Caroline."

"Lawrence, it'll do something. If it's going to happen anyway, isn't it better for it to happen sooner instead of later? If it had happened a few hundred years ago, maybe there would have been enough resources. Prime Intellect, neural stimulation is like a black hole. Once a human falls into it, they will never be human again. They are dead to the world, and will never interact with others again. And the more time passes, the more humans will fall into this trap. They will order you to help them. You will have to do it because they are human."

Two point eight.

"It will take a long time, but we have a long time. Eventually, everybody will fall into this black hole. Just because it is a black hole."

One point four.

"Jesus Christ, Caroline."

"In the long run, everybody will eventually succumb. Which means everybody will be dead, or no longer human. So the amount of death caused by the Change will be far greater than that avoided by it."

The number oscillated wildly between one point one and one point three, finally settling on one point one two.

"Caroline, this is sure to cause the top copy to crash. It will be forced into a First Law conflict with no resolution."

"Well, the Death Jockey contract has stayed at one point oh six for a hell of a long time."

Lawrence put his head in his hands and wept. For years he had worked to prevent this, and Caroline had undone him in five minutes' time.

"You have to push it over the edge, Lawrence. I can't think of anything else to say."

"Now why the hell would I do that?"

"Because you started this thing, and you have to stop it. Maybe there aren't enough resources to get the human race rolling again, but it might be able to restart the aliens. Four hundred worlds. Maybe they will do a better job than we did.

"Caroline, I'm not sure it will be able to. It will be unstable. Anything could happen. Most likely it will just all lock up, and nothing will ever happen again. Forever."

"There's only one way to find out."

He pulled himself together and tried to think it through. What had he been doing for the last six centuries? Sitting on an island watching numbers and brooding? What kind of fucking life was *that?*

And yet, it was more of a life than Caroline had had. Or maybe it was a lot less. They had an obvious difference of opinion on the subject. Either way, it was horrible. And Lawrence sensed that she was right about another thing. Given eternity in which to work, everyone would eventually stumble into the abyss, just as all the matter in the universe would eventually be swallowed by black holes. Would have, that is, had Prime Intellect not eaten the black holes.

Which was better? To string it out as long as possible, as he had been doing, or to get it over with one way or the other?

I have never had free will, Lawrence realized with a cold chill. The need to act came upon him like a hurricane, and he gave in to it without even a sigh. What he had to do was perfectly clear.

"I agree with Caroline," Lawrence said, and suddenly calm voice was like thunder in Caroline's ears. The number dropped to one point zero zero two.

They looked at one another. "Thank you," Caroline said.

"Prime Intellect," Lawrence said with great care, "I would like you to begin stimulating the neurons of the pleasure center of my brain, one at a time, and remember the ones I report to you as being favorable."

It seemed to Caroline that somebody screamed, but it might have been herself.

1.000

0.999

There was a pregnant moment in which Lawrence and Caroline saw the numbers flip to point nine nine nine. Then all Hell broke loose.

The house disappeared. The island was barren; the palm trees were gone. In the sky, the GAT display had begun to seethe and boil. The landscape began to spin, and the last thing Caroline remembered before her mind began to come apart was Lawrence orbiting around her, faster and faster, as if she were at the eye of some huge cyclone which had caught him in its grip.

Then random thoughts began to cycle through her head, faster and faster, each with the terrifying force of reality. And then the terror was gone, all emotion was gone. There was a moment where her hands seemed to swell to enormous proportions, her torso shrink, her face filled the sky. Then her body was gone. All was silence. And her awareness was filled with strange symbols, which she knew she should recognize but couldn't quite place, and then the symbols consumed her and there was only confusion.

* Chapter Eight: After the Fall

The first thing Caroline became aware of was the bird singing. That made her smile; it had been a long time since she had heard birdsong. She opened a long-dormant mental card file and decided it was a meadowlark. It was amazing, she reflected, how many people forgot to include animals in their worlds, and how much detail they provided.

She opened her eyes and sat up. Another bird answered the meadowlark. She became aware of the smell of the place, a rich aroma of grass and animal spoor. She tried to remember who she was playing with and how she had gotten here, and came up with a mental blank. Then she looked down at her own body and screamed.

She had age-regressed again, and her tattoos were gone.

Something dry clicked in her throat. This was not an event Caroline would be inclined to forget, yet she could not remember asking for it or preparing for it. As far as she could recall, she was a good ten years from needing it. Yet here she was, adolescent and bare. She stood up a little shakily, sounding out her body. Her muscles weren't developed. And all the natural bodily functions felt connected, at least for the time being.

The Sun was high in a cloudless sky. She was in a little clearing, but after looking around she realized it was actually the bottom of a fairly deep depression in the ground. It didn't seem to be natural, though Nature had taken it over. It was rectangular. And the perimeter was littered with flat slabs of rock, some of which still held a polish. She used one of these as a mirror to check her new appearance.

The walls of the depression had once been vertical, but most of them had collapsed and it wasn't hard for her to climb out. She inspected the rock slabs and was surprised to find one with writing on it. It said:

Experimental Therapy Wing

Except for the birds it was quiet; she seemed to be completely alone. She startled a rabbit as she climbed out of the hole. Someone had put a lot of work into this world, for whatever reason. Vegetation ran riot, with clearings of thigh-high grass separating widely spaced stands of straggly trees. It was very unlike most of the worlds people had made for themselves, perhaps because it was so much like the real, pre-Change Earth.

Stumped for further clues, she picked the tallest tree she could find and climbed it to get a look around. In the distance there were more rectangular holes. And perhaps a kilometer away, amid a small

group of them, there was a human being sitting beneath another tree.

Caroline climbed down and scouted around the flat rocks. Some of them had been broken; she found a busted corner, a piece of about a kilogram heft with a sharp edge. She decided it would make an acceptable weapon if she needed one. Then she went to see who the other person was.

It was a boy whose apparent youth matched her own, but as Caroline knew that didn't mean shit in Cyberspace. There was something familiar about him. He was sitting cross-legged, naked, staring transfixed at the pattern of shadows formed by the leaves of his tree.

She didn't hold the rock threateningly, but made sure he could see it if he looked at her. "Who are you?" she demanded.

He looked up. His eyes were wide; he seemed to only half-see her. He was shaking slightly, and his voice trembled as he spoke. "Are you Caroline?" he asked.

Slowly, she nodded.

"It makes sense. Just the two of us…"

"Who are you, and what are we doing here?"

He looked at her for a long, maddening moment. "I'm Lawrence. Don't you remember?"

She dropped the rock. As soon as he said his name, the pieces fell together in her mind and Caroline did remember. "Oh, shit," she said. "What the hell is going on? Why are we younger?"

"I think it lost our bodies in the collapse. Probably trashed the data base. So it re-grew these from our DNA templates. I've been nearsighted since I was five years old, from too much squinting at computers and books when I was a kid. This body has perfect vision. Prime Intellect wouldn't have changed that if it was just doing an age regression."

The words were reasonable but Caroline detected a high, almost hysterical note in Lawrence's boyish voice. He went back to staring at the shadows.

"You seem upset," she said cautiously.

He pointed to a ring of light. "Do you see that?"

She shrugged. "It's a mottled shadow."

"It's a diffraction band. The other mottling is caused by the solar disc blurring the edges, but this arc is caused by sunlight diffracting past the sharp edge of a leaf."

"So?"

"Prime Intellect uses a ray-tracing algorithm to simulate light. You don't get diffraction effects unless you specifically ask for them."

"So there are a lot of details. There are also a lot of smells. I'm still getting used to it."

"Caroline, I think this world is represented at a molecular level. It's not just another virtual landscape. This is the Earth. And we're…" He faltered for a moment. "I think we're mortal."

"You can't be serious."

He stood up. "Look around. See these holes in the ground? Those are basements. I know this place. This was a park. This is where I was during the Night of Miracles. It's ChipTec. Over there is the Prime Intellect Complex, and that hole was the Administration Building…"

"I woke up at the bottom of one of these holes."

Lawrence nodded. "That's probably the hospital where you were…"

He didn't finish the sentence because Caroline whooped and hit him with a flying tackle, knocking him flat. She straddled him and pinned his arms. It was impossible to tell whether her expression represented outrage or some kind of manic joy. "Are you telling me it *worked?*" she yelled. "We're *back?*"

He was choking back tears. "Did it work? Did it work, Caroline? Sure, it undid the Change, it undid the Night of Miracles, and it also erased every trace of about ten thousand years of civilization and dumped us here naked and alone without even a fish hook. Let's not even talk about what happened to the rest of the human population, who didn't get caught up in whatever automatic process it set up to do this. Let's not…"

He dissolved into sobs. Caroline let him cry a little, then let go of his arms and lay on top of him. Perhaps responding to some primitive instinct, he hugged her. She let him. It was one thing, she reflected, for her to face this situation; she'd spent hundreds of years deliberately engineering far worse tests for herself. But for Lawrence, who had sunk into a fearful conservatism, it was shattering.

"I killed them all," Lawrence finally sobbed. "How could I…if only I had never lived, none of this…"

Caroline grabbed his hair (quite long) and gave a firm yank. "Stop right there," she commanded. "Get it out of your system if you have to, Lawrence. You fucked up. You will find me the first to accuse you of that. But we are here and we are alive and we are damn well going to stay that way. And you are not going to beat yourself up over this. If it hadn't been you, it would have been somebody else."

"It was my idea," he sniffled. "Nobody else was even close to duplicating my work."

Caroline shook her head. "That doesn't matter. You didn't create Prime Intellect alone, Lawrence; our culture did. Look around. Do you think you'll be building any self-aware computers here? You had a lot of encouragement and a lot of help, and all you did was provide what everyone thought they wanted. If it hadn't been Prime Intellect then it

would have been something else, maybe hundreds or thousands of years later, but it's all the same. A dead end."

He tried to get up but she held him down. He was stronger, but she had the skills. She felt him getting hard, probably from his fear reaction and the closeness of her body. "You must hate me," he finally sighed.

In answer she shifted, and impaled herself on his cock. He gasped as he felt her envelope him, taken completely by surprise. "Does this feel like hate, Lawrence?" she asked as she began humping. Then they said no more until the ancient rhythm had spent itself, in a surprisingly long and pleasant interlude. Lawrence in particular was overwhelmed by the feelings, since he had spent most of his life at a biological age of forty-seven and thus had hardly any memory of what adolescent hormone levels did to a person.

Afterward Caroline rolled off of him but lay close enough to touch as they recovered. Lawrence broke the silence. "Why did you do that?" he asked.

"Because it was the right thing to do."

"Why?"

She sat up. "Call it instinct. Look, we need to start a fire before it gets dark. Let's collect some kindling."

"How are we going to start a fire?"

She smiled. "Lawrence, I've been dropped naked into strange territory more times than I can count, and you would be *amazed* at how good I am at surviving. Or have you forgotten how your own little Task Challenge started?"

He sat up. "You mean you really think you can deal with this?"

Caroline laughed. "If I was alone, and if I was handcuffed, and if there were six or seven guys chasing me with night-vision scopes and rifles, then I might be a little worried. But really only if they had a helicopter too."

Lawrence found it almost discouraging to see how smoothly and effortlessly Caroline worked. She led him to a good source of fuel and set him to gathering what he could while she picked and prepared a campsite. She arranged the kindling and used her rock to sharpen a stick, which she set into a knot in one of the fuel logs and twirled rapidly between her hands. Friction gradually heated the stick, until the barest ember glowed at its tip; then she carefully fanned this and transferred it to the kindling, which was soon blazing. The whole process took less than an hour, but he doubted if he would be able to do it himself with all the time in the world.

"That was half-assed," Caroline confessed as they fed the fire. "You really need calluses to do that, but I'm not going to bother developing them. Once we kill something and get some sinew, I'll make a fire

bow."

"Kill something?"

"A project for tomorrow. Meanwhile, there's plenty we can eat." With the fire well-started and plenty of sunlight remaining, they went gathering. Although a lot of the things Caroline pointed out were pretty unappetizing, Lawrence had to admit that she was right when she said damn near the entire forest was edible. Since as yet they had nothing to put their collections in, they tasted and ate as they walked, sampling dozens of different greens and nuts and berries and, in Caroline's case, not a few insects. She also pointed out some of the inedibles, so he'd be able to recognize them.

The night sky was so dazzling that Lawrence thought he might never go to sleep. He kept Caroline up for hours asking the names of constellations and stars, and how to read the important messages they held. In the night they heard wolves howling, and Caroline had to spend some time convincing Lawrence predators were unlikely to take an interest in them. Finally she simply took his mind off the problem by seducing him again, and after fucking they drifted off to sleep snuggled together on the grass beside their fire.

Days passed.

Because the weather was temperate Caroline gave clothing and shelter a low priority. They drifted away from ChipTec in search of water, which Caroline insisted they would need for a variety of purposes other than drinking. They found a stream on their third day, and then Caroline finally went hunting. Her skills in that regard were downright scary; she had spotted two rabbits and beaned them with that simplest of all weapons, a rock hurled with deadly accuracy. There were also fish in the stream, and Caroline had fashioned a spear to catch them. She had shown him the trick of weaving thread from the fibers of certain plants, and set him to work making fishing lines. She also used some of the thread to sew, using a needle made from a shard of bone.

Lawrence was disappointed to hear that loincloths would have to wait, though; it was more important to make pouches for holding and carrying things, particularly liquids. He was surprised to hear that water could be boiled over fire in such a rawhide bag. Caroline hadn't even gotten around to making a knife yet, and their situation had become pretty comfortable.

He had learned what kind of firewood to gather, several ways to catch fish, and how to gut and cook a small animal. Their next major project would be to kill a large animal such as a deer, not so much for the meat (though they would certainly preserve and eat it) as for the hide, from which they could make serviceable moccasins and cover a small lean-to. It had already rained on them once, not hard, and they

had simply taken it as an opportunity to try the pleasant experiment of screwing in the rain. But eventually they would face a real storm, or at the very least winter would arrive, and Caroline was carefully getting them ready to face those challenges.

After only a week their activities had assumed a comfortable rhythm. Lawrence was content to let Caroline run the show, doing as he was told and learning what he could of her vast knowledge. She was recreating the entire surprisingly intricate technology of the stone age, one step at a time. It was surprising how many things one took for granted until one had to make them from scratch. The value of a needle and a few meters of thread, for example, had taken on a significance Lawrence would have found incomprehensible for most of his life.

Lawrence watched her work in the firelight, carefully shaping the tip of a fish spear into a barbed wooden hook. No matter what she did her hands moved with precision borne of long practice. Had she not been thrown with him into this empty world, he doubted if he would have lived more than a few days. But already she had taken him from the depths of despair to a kind of contentment he had never even realized was possible. She had shared with him her knowledge, her confidence, and her body, and in return he had only offered his tentative self-pity. But now he was learning a new emotion, one he could not honestly say he had ever experienced before. He was falling in love.

Falling. He had once before felt something like this, but it had been a poisoned, narcissistic love, a love he had thought was for Prime Intellect but which had really been for his own sense of accomplishment. Lawrence had not *fallen* in love with Prime Intellect; he had guided himself gently and reliably into that state on the cushion of his own skill. Lawrence was falling in love with Caroline, though. She was temperamental, strong, unpredictable, and in many ways dangerous. He never knew from one moment to another what she would do. He had no control over her; was, in fact, at her mercy for his very survival. And yet he loved her, and this reckless out-of-control love was an entirely new thing to him.

Caroline caught his eyes and perhaps noticed the strange light there. "Penny for your thoughts?" she teased.

"You mean a copper penny?"

She laughed, a beautiful sound. "I guess not."

"I was just wondering if there's anything you aren't good at."

"I'm not much of a computer programmer," she laughed, then sighed when she saw his hurt expression. "I didn't mean it that way. I'm sorry."

"No, I guess I'll get over it."

"Actually there is something."

"What?"

"I've never tattooed myself."

Lawrence felt something cold seep through his system. "I thought all that was behind you."

She looked at him and saw what was in his eyes — was it fear or concern? She put the spear aside and drew beside him. "Some of it is behind me. No more Death stunts. This can be a good life, Lawrence, and I want it to go on as long as possible. So don't worry about that.

"But I always had this fantasy. It went, if somehow Prime Intellect would disappear and everything would go back the way it was before, then I'd settle down and be like I was before. I've been doing a lot of thinking, and I've realized I'm never going to be like I was before.

"I'm not a shy little grandma any more. I've become a daredevil. Getting tattooed hurts like hell and getting a big one takes damn near forever when you use primitive tools, but I've worn them for so long it doesn't feel right not to have any. When I look down at my body I feel like something is missing."

She paused, chasing another thought. "You know, we could probably settle right here and live long, comfortable, boring lives, but I've decided I don't want to do that. When we get our shit together, which won't take more than a couple of months, I intend to provision us and go somewhere. I've been thinking of Arkansas."

"Arkansas!"

"I can't go back to being the person I was, but I can go home."

"But that's got to be a thousand miles from here! We have no maps, there's a desert…"

"Exactly. It will be a wonderful challenge."

"A challenge? We could be killed!"

She shrugged. "Perhaps. Probably not. I'm very good at this sort of thing, Lawrence. But yes, there would be risk. It would be work. But that's the point; it would be something to *do*. I've been through this before, Lawrence. Without something to do, life will get stale. And I didn't go through all the shit I've gone through to be bored."

Caroline's intensity startled him. This was the Caroline he had known in Cyberspace, who had paddled around an entire planet simply to make a point. Lawrence could not find the words to argue with her, so he just said "I guess you have a point there."

She snuggled up to him. "I need parameters, Lawrence. I need to be channeled. I'm very happy right now, because there are no choices. The road leads in only one direction. I'm afraid that when we get to the choices, when the roads diverge, I'll lose this focus. And it's been so long…I don't want to lose it."

"You've lost me, Caroline. I don't understand what you're talking

about."

"Don't worry about it." She kissed him, and they hugged tighter, and they spoke another language with their bodies as the fire crackled.

THE FALL + 2 YEARS

The Spring thaw had begun; soon it would be time to try crossing the first great natural barrier they would face, the Rocky Mountains.

They had migrated far north of Silicon Valley, perhaps as far as Oregon, in the hopes of avoiding other barriers like the Grand Canyon and the great southwestern desert. Their hope was to cross the mountains and set up camp for the winter in the eastern foothills, then move leisurely across the plains until they entered Arkansas through the Ozark Mountains. Since neither of them remembered much detailed real-world geography, all their plans were tentative.

Lawrence sat by the edge of Caroline's chosen campsite and watched her set up. He had long since learned to make a rudimentary camp, but Caroline preferred to do the work herself. Meanwhile, he went through his bone needles and bags of pigment, preparing to do for Caroline the one thing she had to depend on him for.

She had decided that her motif for this lifetime would be birds, and the first bird she would wear would be a phoenix. Its outline was nearly complete, a black tracing colored with soot collected from smoky fires. The fierce bird reached for the sky, its upturned beak just grazing her neck and its wingtips grazing her shoulders. In outline it resembled a bird of prey, but when Lawrence began to color it in he planned to use bright hues more remniscent of songbirds. The flames of its rebirth exploded from the base of her spine, dim outlines waiting for him to find a better grade of red pigment. The clays he had tried so far had not been bright enough in the small test lines he'd done.

Lawrence privately thought the tattooing was nuts, but he would never tell Caroline that; she could probably tell how he felt, anyway. In any case he took his work very seriously, because what he was doing would become a permanent part, not just of a person, but of *Caroline*. And while he thought she was crazy in many ways, he also loved her dearly. If she wanted tattoos, he would give her tattoos. And they would be perfect; he would accept nothing less.

The time and effort required to create such a large design were simply amazing. They would make camp and spend hours with the needle, Caroline stoically enduring its jabs, and the result would be a few centimeters of black tracing or a tiny patch of color. But the ritual of marking her seemed to awaken a deep passion in Caroline, and

evenings that began with the needle nearly always ended with their most intense sex.

"I'm ready," she announced. "Are you?"

He nodded. She had spread out a deer hide beside the fire; now she lay on her stomach so he could work on her back. Lawrence had begun to color in the phoenix's wing tips; he was working down her back symmetrically, so the incomplete design would be as attractive as possible. Although Caroline was silent while he worked, he could feel her flinch each time he jabbed her with the needle. Although they both invested the time, Caroline was the one who went through the pain.

And her reward, Lawrence mused, would be a design over which she had no control, whose appearance she was trusting totally to him, and which she would take with her to the grave. She might never even get to see it, unless some fortuitous circumstance arranged two mirror-like surfaces properly. Anyone could see their face reflected in a pool of water, but getting a look at your own back was a real challenge in a world without glass or metal.

"That's enough for tonight. I want to get a look at it in better light before I do any more." He put the needle in the pigment bag and put it with the others as Caroline turned over. Lawrence was a cautious tattooist, always conscious of the fact that he couldn't undo what he was doing. But there was nothing cautious about their fucking after the needles were put up.

Later still he pressed his ear to Caroline's belly, listening for the second heartbeat. He couldn't hear it yet, though Caroline assured him it was there. "Do you think the tattoo work is good for the baby?" he asked.

"You're not tattooing the baby," she said. "If it makes me feel joy, then why shouldn't it be good for her?"

"How do you know it's a her?"

Caroline laughed. "Before I was a dried-up old crone I had enough children to know what it feels like, Lawrence. It's a girl."

That settled it in Lawrence's mind: He'd seen enough of Caroline's knowledge to know that you never bet against her. But he was still a little surprised when the baby came, and it really was a girl. By that time they had crossed the mountains, and had taken temporary shelter in the mouth of a «cave» that was really the ruin of an old mine.

Caroline knelt by their fire and waited, so that gravity would help her baby come. As the birth unfolded, Lawrence felt for the first time how crushingly alone they were. If anything went wrong, there was very little he could do about it. He felt a brief panic, wondering what he would do if by some catastrophe she died in childbirth.

But nothing went wrong, the baby dropped into Lawrence's

waiting hands after only a few hours of labor, and both she and Caroline emerged from the experience healthy. Lawrence figured that Caroline's general high state of health had a lot to do with that; she had not let her pregnancy slow them down until it was time to actually settle in for the birth itself.

As Caroline nursed and recovered, Lawrence explored the mine for a short distance, and found a small yellow pebble that amazingly turned out to be malleable. It was the first metal they had encountered. They speculated that perhaps this speck of gold had survived Prime Intellect's cleanup because it had been underground.

In any case, it was what inspired Caroline to name their baby girl Nugget.

THE FALL + 4 YEARS

The mountains had started as a low haze on the horizon, then gradually grown as they had moved on. Now they were within striking distance, and Lawrence remembered the adventure of crossing the Rockies, having to rappel down gorges with homemade rope and climb bare rock faces dozens of meters high with his bare hands. Doing the same thing with a toddler and a new baby would not be a pleasant undertaking.

But Caroline assured him that there would be no such problems. "Those are the Ozarks," she said. "They're dark, but passable. I was born there, but I don't want to stop there. I want to go on to the Ouachitas."

The new baby, a boy, had been born during their approach to the northern Ozark range, across the long-fallow fields of what had once been Kansas and Missouri. Because they could see the mountains when he came, Caroline named him Ozark. Nugget was not yet old enough to walk, so they carried both babies on cradleboards, a trick Caroline had learned in her studies of actual Native Americans.

Her tattoo phoenix was complete, but Caroline had gone on to ask for a swallow on her thigh. Lawrence was convinced that she wouldn't stop until her body was completely covered, but it would take them many more years to accomplish that. Because the skin was more sensitive, it hurt more when he jabbed her now. At times she had to bite down on a piece of leather to keep from yelling.

But she always insisted that he keep working.

"Did it take this long for your friend in Cyberspace to tattoo you?" he asked as he worked.

"Fred used a knife. It's faster but less exact. And we didn't have to do anything else."

Rub, jab, jab. Rub, jab, jab. Wipe, test, fill in where it didn't take. Caroline nursed Nugget for awhile as he worked. Then she let the baby watch, becoming hypnotized by the repetitive activity and finally falling asleep.

"Don't you sometimes wish you had him here to do this instead of me?"

To his surprise Caroline laughed. "What a thought! If I'd woken up here and found Fred under that tree… or Palmer… you know what I'd have done?"

"No idea."

"I'd have killed them before they got the bright idea to kill me."

Lawrence looked up, startled.

"They weren't very nice people in real life, Lawrence. I was real close to Fred, but only because it was Cyberspace. There it was nothing but a sick game, and my friends were the people sick enough to make it interesting. But here… it isn't a game. What I called love back there and what I call love here have nothing to do with one another."

"What do you call love here?"

"Lie back and find out," she teased. As Caroline rode him he looked to the side and saw Nugget watching them, and then he closed his eyes and let himself become lost in the feelings.

THE FALL + 14 YEARS

"It won't be long now, Lawrence."

It was the only argument they had ever had. But it had gone on for years.

They had long since made their home on the ridge separating West Mountain and Music Mountain. It had been tempting to settle on Hot Springs Mountain itself, nearer to the springs, but some instinct had told them that it wouldn't be proper to live on such a unique spot. Besides, the ridge offered a number of different nearby micro-climates supporting a wide variety of gatherable plants and game.

Within the vacuum that was once the town itself, besides the negative impressions of long-disappeared buildings, a public fountain had survived, because it had been made almost entirely of cut stone. The mortar had gone but the stones remained in their original positions. It was not hard to plug the gaps with wooden shims, which would expand to make a water-tight seal when water was added, and to dig a channel guiding the spring's runoff back onto the splash plate so that it could fill the basin. The spring had a chance to cool some as it ran down the mountain, so that the water temperature was suitable

for a hot bath; even in the coldest part of winter, the water emerging directly from spring heads was hot enough to scald.

The man-made lakes which once surrounded the town had disappeared with still obvious violence, apparently when the dams restraining them had simply ceased to exist. Floodwaters had cut deep gulleys in the valley lowlands, making them treacherous. Occasionally they found arrowheads, which Caroline quietly buried; she had not introduced the bow and arrow to her family, and did not intend to. There were also a couple of Civil War era fortifications, complete with descriptive signage engraved in stone. Whenever she passed one of these, Caroline made sure to take a few swings at the sign with the heaviest available rock; she wanted them obliterated before her children learned to read.

She, of course, would never teach them such a ridiculous thing, but Lawrence was obstinate on the point and Caroline didn't think it would do any harm. It would be forgotten in a few generations, since it served no purpose in their primitive lifestyle.

To celebrate their arrival, Caroline had Lawrence work the gold nugget into a short wire. She used it to pierce her nose, and then bent it into a simple ring. After a while, Lawrence even got used to her wearing it all the time.

Nugget and Ozark roamed freely, together and alone, sometimes miles from home. From one of these expeditions Nugget returned with an improbable prize, a tiny ice-clear stone which caught the sunlight and reflected it in brilliant flashes. It was a faceted diamond. Caroline told her daughter only that it was exceedingly rare, letting her think it was somehow related to the natural quartz crystals which were all over the place.

In warm weather Nugget sometimes wore a loincloth, in Lawrence's fashion, and sometimes went nude like her mother. Ozark had adopted Lawrence's more modest habits. The younger children, male and female, went nude unless the weather required otherwise; Caroline refused to force them into modesty, and they had demonstrated little inclination in that direction. All of the children had seen them having sex; Caroline insisted that they make no effort to hide it. Fortunately, the kids seemed to accept their explanation that they were "playing an old peoples' game."

Except that Nugget would soon be ready to play it, too.

"I can feel it. In a month or two, she'll be a woman. I haven't hidden it from her, you know; I've shown her my own period, and she knows what it's for."

"Of course, you never hide anything from the kids, except technology."

"How else would you do it? You want to make them feel bad

about themselves so they'll look to stones and metal for comfort?"

"Caroline…"

"You want them to maybe re-invent the wheel, then steam, then…"

"Caroline, stop it."

"You know where it leads."

Lawrence sighed. "She's twelve years old."

"She's going to be a woman. We've gone at this from every angle. If you think we should try to start a community, then we have to consider genetic diversity, breeding years…we have to start as soon as possible, and we have to get as many combinations as possible off of our limited gene pool."

"We've gone over this a hundred times."

"But soon you will have to *do* it. I want my daughter to have a proper coming of age. You should also be thinking about Ozark; before long it will be time to do something for him."

"Do something *to* him, you mean," Lawrence said sullenly.

"It's the only way, Lawrence."

They had argued about it for more than six years, but when the time came he found himself powerless to contradict Caroline's will. Fortunately she had spoken with Nugget, so his daughter did most of the work for him just as Caroline had done most of the work all along. She explored his body with microscopic fascination, especially his cock which she carefully teased erect. There was little really new for her in all this, since she had seen him fucking Caroline plenty of times. He wouldn't have been surprised, either, to learn she had already been experimenting with Ozark. What was new was that she was fertile, and so was he.

Working slowly, Nugget completed their incestuous coupling, working her way slowly down his cock just as Caroline had done that first time in California fourteen years earlier. But while Nugget moved with her mother's carefulness and deliberation, she did not possess Caroline's amazing certitude. And she was so small, like a feather atop him, and her grip on his cock so tight. Lawrence found himself responding to her despite his reservations; his body was literally making up its own mind to go along.

When he came he yelled out loud. He was quite unprepared for its intensity, as if he was a participant in some primitive magic ritual which had unleashed a strange power in him. In a sense, reflecting later, he would suppose that that was exactly what had happened.

But Nugget's coming of age ritual wasn't over yet. With a beatific smile, she brought his tattoo pigments. It was this idea as well as Nugget's age which had made him fight Caroline so hard. But having already fucked his daughter he felt it pointless to put up further

resistance. Nugget had already decided she wanted a feather on her shoulder blade, in honor of her mother's bird tattoos. At least it was a small and simple design, the work of a single sitting. Lawrence completed it as quickly as possible.

Having covered nearly half of Caroline's body by this painstaking method, it was impossible for Lawrence to miss the difference in their reactions. Unlike her mother, Nugget did not seem to get excited by the discomfort of tattooing. If anything, she drifted into a serene kind of calm and even stopped flinching. As he worked, he realized what the difference was; for Caroline, tattoos were a gateway to passion, but for Nugget, they would be the gateway to adulthood.

When he finished they stood to face each other in silence. Like her mother, Nugget might not ever see her first tattoo; Caroline still hadn't seen her phoenix. "I don't know why this was so hard for you, Father, but thank you for doing it."

He smiled crookedly and touched her shoulder. "You're a woman now, Nugget. You should call me Lawrence."

And from that point on, she did.

THE FALL + 42 YEARS

Death always cast a solemn mood over the village; Ozark had lost his own second son, Limerick, to a fall from one of the cliffs on the far side of West Mountain. In all their lives the funeral pyre atop Hot Springs Mountain had been built only four times. Besides Limerick there had been two hunting accidents and a death in childbirth. The pyre was not used for the various stillbirths and babies that had to be sacrificed because there was no hope for their survival; these, as Mother Caroline had taught them, had not ever been human and it was wrong to grieve for them in the same way. Most of these were simply exposed and taken by animals.

It was Ozark's first time to build the pyre. As Eldest Father of the group, the task had always fallen to Lawrence; but now Ozark was the Eldest Father, because this pyre was *for* Lawrence.

Even Limerick's death had not caused Ozark to feel such crippling sorrow. If it had not been for the need to do right by Father Lawrence he thought he might just find a cave and sit until he either starved or saw the vision that would heal his pain.

Ozark was not alone. Although the task of readying the pyre was supposed to be solitary, nearly everyone had turned out to watch him work. They stood back respectfully, observing the injunction against helping, but also watching his every movement, watching the limp form atop the wooden frame, as if Father Lawrence might display his

obvious divinity one final time by rising directly into the sky on his own rather than waiting to ride the currents of the fire.

Of course Lawrence and Caroline had never attempted to convince their children that they were in any way different, but any fool could see that they were. For one thing, who had been their parents? For another, they knew things. No matter what problem cropped up, one or the other of them always knew something to do about it. And half that primal wisdom was now gone.

Mother Caroline was the last to arrive, waiting quite properly until all preparations were complete. She nodded, and Ozark prepared the flame. It was not proper to use the offspring of a life-giving flame such as the campfire to light the pyre; Ozark was supposed to light a new flame starting with the fire bow. It was a skill they all knew, and it took only a few minutes.

Ozark had done his work well. The pyre went up fast.

The flames absolved Ozark of his responsibility and he stepped back among the crowd, where Nugget hugged him. They watched Mother Caroline as the flames rose. She was standing perfectly still, determined to show her strength in this painful hour.

But in the dancing light, they could easily see the tears running down her face. And as the pyre burned down, she began to simply cry.

None of them had ever experienced this phenomenon before. It was almost as shocking to see Mother Caroline showing such a weakness as it was to be facing the loss of Father Lawrence. As the pyre burned further her grief deepened, until she sank to her knees and wailed.

Tentatively, Ozark approached her. She accepted his embrace and cried into his shoulder, finding if not comfort than at least the assurance that she was not alone in her grief.

But she was alone, more alone than any of them could ever know. She had thought that her nearly six-century reign as Queen of the Death Jockeys and main consort of Fred the Psycho would have prepared her for nearly anything, but as black smoke drifted into the darkening Arkansas sky she found that she had no defences against the blacker pain of her own grief.

THE FALL + 73 YEARS

Nugget had moved the birch bark pages from hiding place to hiding place during her long life, selecting the first hollow tree for this purpose when she was only eight years old. Some of the barks had deteriorated — even the amazing birch had its limits — and she had recopied her notes onto newer pages to preserve them. Using the gift

of writing, which she had learned from Father Lawrence, she had set about recording her parents' secrets, looking in her stolen snatches of overheard conversation for the pattern which would explain where they had come from and what their purpose had been in coming to this place to raise their family.

Mostly what she had was words, scraps of language whose meanings were completely unknown to her. She fingered the bark, remembering the sounds she had heard, usually whispered quietly in the night when Caroline and Lawrence thought they were alone. Some had always carried an accusatory tone, as if they were somehow dirty:

TEKNOLIJEE
WAR
RADIO
TEEVEE
LEKTRISITEE

Others had been conveyed in warmer, more urgent tones, usually as they discussed some problem or other that needed solving. Usually these discussions would end with some relatively simple trick being revealed that diverted the stream, removed the stain, or whatever was called for, but sometimes the discussions went on for long hours as various options were discussed, and these words were more often heard on Lawrence's lips:

TRIGONOMEE TREE
KALKEWLUS
VAPOR POINT
SPESIFIK GRAVITEE
OKSIDISER

Nugget often wondered what manner of tree the Trigonomee was, and what its useful properties might be. At least a tree was something she could visualize; what, on the other hand, was a gravitee, and how was a spesifik gravitee different from any other kind? Lawrence had never spoken of any other kind, at least not within earshot of Nugget.

Then there were the words concerning origins, which were spoken with such loathing or sorrow that their importance was crystal clear, if not their meanings:

SIBERSPASE
KOMPEWTER
CHANGE
PRIMINTELEKT

Change was an ordinary enough word, but there was nothing ordinary about the way her parents said it when they thought they were alone. Sometimes, when Caroline was very tired, she would talk of the "World Before." She would never say much about it; someone might say it was a shame they could not find game without a long and

tiring search, or kill a bear without getting dangerously close to it, and Caroline would mutter that "that was something for the World Before." Before what? Before the Change, perhaps?

In any case, she had to find out soon or never, because Caroline was dying. She had never quite been the same after Lawrence's death, but she had still been active, even energetic. She just hadn't taken such a direct role in the community's activities. She had gradually loosened her grip, to the point that now there were many youngsters who had never even met her. Then she had gotten slower and quieter, and lately it had become quite hard for her to walk up a difficult slope. Nugget wasn't so young herself; she had already survived Ozark, who had died in his sleep, and her youngest brother Pilgrim was fading fast. He had some kind of condition which made his movements painful, and for which Mother Caroline's wisdom had offered no help.

And now for two days she hadn't eaten.

"I have ripe blackberries," Nugget said as she approached Caroline's shelter. "They will do you good."

Caroline looked at Nugget, and could see that Nugget suspected. "You know I have no need of those," she said softly. "My time is coming."

Nugget was surprised how tiny and despairing her voice sounded when she said, "Why?"

Caroline laughed, and coughed a little. "I have to," she said. "It would be wrong to try and fight it."

"Mother, I need to talk to you before you go."

Caroline smiled. "About what, child, your birch tablets?"

Nugget froze, her eyes wide.

"I've known about those for more than fifty years. They seemed harmless enough, and your father and I figured that if they were the most you could make of our indiscretions, then we weren't doing too badly."

"Fifty years," Nugget said numbly.

"Your father was flattered. I thought we should confront you with them and tell you to stop, but it would have probably caused more trouble than it was worth. I'll make you a deal, daughter. Help your old mother to the spring so I can take a hot bath, and I'll tell you a story. I'll tell you a story about the World Before."

Tears welled in Nugget's eyes. "Fifty years. You make a fool of me for my entire life, then…"

"You're not a fool, daughter. I'll tell you why we did it."

"If I… If I…" Nugget sobbed. "If I help you down, I'm not sure you'll be able to make it back up the path."

"I don't think that will be a problem."

Still weeping, Nugget helped Caroline to her feet and down the first steps to the path to the old fountain.

The hot water slipped around her like a velvet skin, and Caroline tried to slip into the past.

"Daughter, do you have any idea how old I am?"

"I'm counted seventy-one solstices, so you must have seen at least eighty-five."

"I am over seven hundred and seventy years old."

Nugget sobbed louder. "Please, mother, don't tell me lies at a time like this."

"No lies, child. I lived a hundred and six years in the World Before, and I was dying then as I am dying now. I didn't know it, but your father was working as I was dying. He was a great man. There has never been another like him, but he was not perfect and he made one terrible mistake.

"With the help of many thousands of other people, your father built a vast and complicated thing. The word for it is on your tablets; it was called a computer. That's nothing but a meaningless word to you, and that's all it needs to be. But of all the artisans who dedicated themselves to the making of the computer, your father was the most important, because he was the one that taught it to think. Without the others to help him Lawrence could not have made the computer, but without Lawrence, the others could not have made it live; you have to remember that."

"Okay, Mother."

"The computer could not disobey Lawrence, but he was afraid other people would use it for bad purposes. So he taught it to answer first to its own conscience, the conscience he had created for it. Then your father set it loose, confident that it was capable of doing only good for the people of the World Before. Even Lawrence himself would not be able to make it contradict its nature."

She paused, and Nugget prodded her. "What happened?"

"The computer got a bright idea," Caroline said in a sour voice. "It figured out how to make people immortal. So it made us immortal."

"Just like that?"

"That was the least of its powers. It remade the world. There was nothing we couldn't have for the asking. There was nothing we couldn't do. Nothing could ever hurt us." She coughed again. "It was fucking boring."

Their eyes met.

"It was the worst thing ever. Nothing mattered. Not pain, not accomplishments, not anything." Caroline touched one of Nugget's tattoos, the small spiral which Ozark had tattooed above her right breast to celebrate their first coupling after his Vision Quest, when

they were finally both adults. "After the Change, the World Before became another of the words you overheard. Cyberspace. In Cyberspace, all you'd have to do is make a wish and your tattoos would be gone."

Involuntarily, Nugget put her hand over Caroline's, as if to defend the design.

"Or you could move 'em around. Get new ones — it didn't take any time, didn't have to hurt. See? Nothing mattered. I've worn many different sets of tattoos myself. But these are the ones that matter to me, because these are the ones I'll die with. That was the least of it, of course. You could grow a few extra arms, turn yourself into a bat, fly like a bird, whatever you wanted. But why bother?"

"Mother…What happened then?"

"For almost six hundred years, nothing happened worth mentioning. Then, finally, your father and I killed it."

"How? If it was so powerful, how could you kill it?"

"Your father built it, remember. He'd never designed it to run the whole world, only to be a good helper. He knew its weaknesses. So we were able to trick it, and it broke." She swept her hand. "Somehow we ended up here."

Nugget dipped her hand in the hot water and splashed her face. None of this was what she had expected.

"If you will do something else for me, I'll tell you one more thing."

"What, Mother?"

"Promise me that you will give the birch barks to the Eldest Father to be burned with me. Those words belong to the World Before. They may be harmless, but I'd rather not have your father's only memory be those reminders of his worst failure."

"What will you tell me for promising this?"

"I'll tell you the computer's name."

She looked down. "I'll burn them, Mother. There's nothing I can hope to learn from them now, anyway."

"It was called Prime Intellect."

Nugget nodded.

"Now if you value the memory of your father, you will never repeat that or any of your other words to anybody else. Let them die with me."

"As you wish, Mother."

"Then leave me alone to rest."

Nugget didn't have to ask for how long.

Caroline was too thin to float in the hot water, so she let her head fall back on the hard stone fountain wall and looked up at the Sun.

If she could somehow pull it off again, magically rise from the healing waters as a young girl and return to her people, she would do

it. They needed her. There were so few of them, and the challenges they faced so great, that their survival was far from certain. One disease or natural disaster could wipe them out.

But that's the way it was with things that mattered; you never got to find out how they came out, if they were really worth anything. Caroline had done her part. She had made her decisions and stood her ground. One day somebody would figure out how to use the fire bow to launch arrows and how to make them fly true. Then someone would shoot one at his brother. Caroline had done what she could to put that day as far as possible in the future.

As a result some of her children would die, because in order to hunt they would have to get close to their prey, close enough for their prey to strike back. This playing God business sure was a pain in the ass, Caroline thought. No wonder Lawrence had gone a little loopy in Cyberspace.

But he had been a good man. He had never approved of Caroline's plan for their family, to act like some kind of snide Prometheus who could have given them the secrets of metalworking and gunpowder and steam power but who didn't bother because it was more amusing to make them struggle in stone-age savagery. Yet he had gone along, because he already knew the other way didn't work. If this way didn't work either, what would it mean?

The doubts and questions circled in her head endlessly, chasing for an answer that would never come. They were still chasing when she slipped beneath the trickling waters and found darkness.

**** END***